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TITLE: Auction information transmission processing

ABPL:
An auction information transmission processing system is constructed by connecting a most significant front computer to a host computer, arranging at least one stage of a plurality of intermediate front computers and a plurality of least significant front computers so as to be connectable to the most significant front computer in a tree-like configuration via communication lines, and arranging a plurality of dealer terminals so as to be connectable to each of the least significant front computers via communication lines. Each of the dealer terminals has basic pattern data storage means storing pattern data indicative of basic display screen pictures and exhibit data storage means storing data peculiar to articles on exhibit at an auction. When the system is started up, the host computer transmits a line connection signal to the front computers. After bidding starts, each of the front computers, in response to a command from the host computer, selects a predetermined number solely of bid-up signals from each of the dealer terminals and transmits these signals to a front computer. The most significant front computer selects only a predetermined number of bid-up signals and bids up the price of an exhibit being auctioned. After a pledge to buy an exhibit is made, the least significant front computers identify pledging members based on the member registration data, and data indicative of these members are transmitted to the front computers of higher significance.

BSPR:
This invention relates to an auction information transmission processing system which enables individuals scattered over a wide area to participate in an auction on a real-time basis without gathering at the auction site.

BSPR:
Conventionally, auctions of used cars or the like require that a used car to be presented at the auction by a participant be brought to the auction site by overland or other transportation means.

BSPR:
An auction system by which articles such as used cars can be auctioned automatically is available and includes an auction data processor installed at the auction site for processing predetermined data relating to the used cars to be presented at the auction, as well as data relating to the registered members of the auction group, display units installed at prescribed locations of the auction site for displaying various items of auction information, and bidding buttons also available at these locations so that they can be operated by those participating in the auction. A participant presses the bidding buttons while observing the auction information that appears on the screen of the display unit, thereby issuing a bid-up signal that is then processed by the auction data processor. In this manner a successful bidder can be determined automatically.

BSPR:
A problem with this conventional auctioning method in which participants bring

the used cars to the auction site is that the trouble must be taken to transport the cars to the site. In addition, though the conventional system automates the auctioning off of the used cars in the manner described, it is still necessary for the participants to be present at the auction site.

BSPR:
A conceivable alternative to the foregoing would be to construct a system in which a host computer is connected directly to a number of dealer terminals via the leased telecommunication lines or public telephone lines of the Nippon Telegraph & Telephone Public Corp. (NTT) or the American Telephone & Telegraph Co., Ltd. (ATT). The system could then be used to carry out an auction by making it possible to transmit a variety of auction data between the host computer and the dealer terminals. With such a system, however, a huge amount of auction data such as the data relating to the articles being auctioned must be transmitted over the leased telecommunication lines and public telephone lines, and too much time would be required to transmit the data. Since this would make the instantaneous transmission of constantly changing auction data difficult, it would not be possible to hold the auction on a real-time basis.

BSPR:
Accordingly, an object of the peesent invention is to provide an auction information transmission processing system which enables individuals dispersed over a wide area to participate in an auction without gathering at the auction site.

BSPR:
In accordance with the invention, the foregoing object is attained by providing an information transmission processing system in an auction information transmission system constructed by connecting a single most significant front computer to a host computer, connecting a plurality of intermediate front computers and a plurality of least significant front computers to the most significant font computer in a tree-like configuration via communication lines, and connecting a plurality of dealer terminals to each of the least significant front computers via communication lines. Each dealer terminal has basic pattern data storage means storing pattern data indicative of a basic display screen picture and exhibit data storage means storing data peculiar to articles on exhibit at the auction. When the system is started up, the host computer transmits a line connection signal to the front computers, whereby the host computer is connected to each of the front computers. The host computer then transmits auction data such as member registration data to the least significant front computers, and the data are stored in these computers. Further, the least significant front computers are connected to the dealer terminals, and data are extracted from the basic pattern storage means and exhibit data storage means of the dealer terminals, and these data are displayed on the corresponding display screen, in response to a command from the host computer. The front computers select a predetermined number of bid-up signals input thereto in a predetermined period of time and bid up the price of the article being auctioned. After bidding starts, each front computer selects a predetermined number solely of bid-up signals from each dealer terminal in a predetermined period of time and transmits these signals to the front computer of higher significance. The most significant front computer selects a predetermined number of bid-up signals input thereto in a predetermined period of time and bids up the price. A pledge is deemed to be made when the price reaches a preregistered sell-off price or in response to a sell-off signal issued by a seller. The least significant front computers identify members, who have issued bid-up signals at the time of a pledge, based on member registration data, and data indicative of these members are transmitted to the front computers of higher significance to decide a successful bidder.

DRPR:
FIG. 1 is a block diagram illustrating the configuration of a used car auction information transmission system according to the present invention;

DRPR:

FIG. 4(B) is a view showing a ranking table illustrating the rank of ports to which POS (point-of-sale) bid-up signals are inputted;

DRPR:
FIG. 6 is a view illustrating the generation of bid-up signals in an auction information transmission processing system according to the present invention;

DRPR:
FIG. 7 is a flowchart illustrating the overall flow of auction processing;

DRPR:
FIG. 11 is a flowchart illustrating the flow of auction start processing;

DRPR:
FIG. 12 is a flowchart illustrating the flow of auction operation processing;

DRPR:
FIG. 19 is a flowchart illustrating the flow of auction termination processing;

DRPR:
FIG. 20 is a view illustrating the format of data transmitted by the auction information transmission processing system of the present invention;

DRPR:
FIG. 21 is a flowchart illustrating the flow of POS bid-up signal selection processing executed within each front computer;

DRPR:
FIG. 22 is a view illustrating the format of POS bid-up signals; ,and

DEPR:
A preferred embodiment in which the auction information transmission processing system of the invention is applied to the auctioning of used cars will now be described in detail.

DEPR:
FIG. 1 is a block diagram illustrating the configuration of a used car auction information transmission system according to the present invention. The auction information transmission system includes a single host computer 10 having a single most significant front computer 20 connected thereto. The system further includes a plurality of intermediate front computers 30-1, 30-2, 30-3, . . . connected to the most significant front computer 20 via leased telecommunication lines 60-1, 60-2, 60-3, . . . , respectively. A plurality of least significant front computers 40-1-1 through 40-1-n, 40-2-1 through 40-2-n, 40-3-1 through 40-3-n . . . are connected to the intermediate front computers 30-1, 30-2, 30-3 . . . via leased telecommunication lines 70-1-1 through 70-1-n, 70-2-1 through 70-2-n, 70-3-1 through 70-3-n, . . . , respectively. Thus, the most significant front computer 20, the intermediate front computers 30 and the least significant front computers 40 are connected in a tree-like configuration via the leased telecommunication lines 60 and 70.

DEPR:
Auction processing in the used car auction information transmission system of FIG. 1 is executed in the sequence shown in FIG. 7. The sequence is as follows: host line connection processing (step 1), member registration processing (step 2), terminal line connection processing (step 3), auction start processing (step 4), auction operation processing (step 5) and auction termination processing (step 6). Each of these steps will be described below.

DEPR:
Laser disks storing the necessary auction data, such as the auction starting time, name, external appearance, year, model, evaluation and distance traveled

of the automobiles to be exhibited, are distributed, as by a private delivery service, to the dealer terminals 50-1-1 through 50-1-n, 50-2-1 through 50-2-n, 50-3-1 through 50-3-n, . . . by the day before the start of the auction. Accordingly, since each of the dealer terminals 50-1-1 through 50-1-n, 50-2-1 through 50-2-n, 50-3-1 through 50-3-n, . . . will acquire the data relating to the used cars to be auctioned off, an individual wishing to participate in the auction loads the laser disk in the video disk player 52 to display the aforementioned auction data, namely the name, external appearance, year, model, evaluation and distance traveled of the automobiles to be exhibited. In this way the participant can get a preview of whether or not the desired used car is being offered for auction.

DEPR:
Pattern data relating to basic pictures of used cars offered for auction, as shown in (A) through (E) of FIG. 23, are stored beforehand in the ROM 57 and are capable of being displayed on the display screen of the display unit 53. Since these basic auction pictures are data common for used cars offered for auction and almost never change, no particular problems arise by storing them in the ROM 57 in advance.

DEPR:
The host computer 10 then transmits an auction start signal to the dealer terminals 50-1-n, 50-2-1 through 50-2-n, 50-3-1 through 50-3-n, . . . to start the auction. This is the auction start processing step 4 of FIG. 7.

DEPR:
Next, the host computer sends a signal to the dealer terminals 50-1-n, 50-2-1 through 50-2-n, 50-3-1 through 50-3-n, . . . , whereby the basic picture pattern data stored in the ROM 57 (FIG. 3) and the used car data stored on the laser disk are looked up. Thus, specific auction data relating to the used cars available are displayed on the video display unit 53 (FIG. 3) via the video disk player 52. The last picture displayed on the screen is a prescribed seller picture at the exhibiting shop and a prescribed buyer picture at the other locations. Next, as will be described below, there is a transition to the auction operation. This is the auction operation step 5 of FIG. 7.

DEPR:
Lastly, the host computer 10 sends an auction terminal signal to the dealer terminals 50-1-n, 50-2-1 through 50-2-n, 50-3-1 through 50-3-n, . . . , whereby the auction termination processing step 6 of FIG. 7 is executed.

DEPR:
In the auction processing of steps 1 through 6, the exchange of data between the host computer 10 and the front computers 20, 30, 40 is performed through an ordinary transmission procedure up to the auction start step 4. When auction business starts, the minimum data necessary for the auction business are transmitted using the minimum number of bits in order to make the data transmission time as short as possible.

DEPR:
When the auction operation is in progress, a buyer at each of the dealer terminals 50 observes the last picture of used car auction information displayed on the screen of the display unit 53 and presses the POS switch 54 (FIG. 3) to transmit a bid-up signal. (If the buyer holds the POS switch 54 depressed, the bid-up signal is issued continuously. The manner in which the signal is issued is stored in the ROM.) However, if a large number of dealer terminals 50 send bid-up signals to the host computer 10 simultaneously through the least significant front computers 40, intermediate front computers 30 and most significant front computer 20, the most significant front computer 20 and the host computer 10 will have to process a large quantity of data. Since this processing will require a long period of time, it will not be possible to perform the auction business on a real-time basis. Accordingly, it is required that some means be provided for allowing the front computers 20, 30, 40 to select only a predetermined number of bid-up signals and send these selected signals to a more significant computer. A specific example of such

means will now be described.

DEPR:
The front computers 20, 30, 40 are so adapted that more than three bid-up signals will not be transmitted to a more significant front computer within a time period of 300 msec. In other words, the number of POS bid-up signals is narrowed down within the least significant front computers 40, and the same is done within the intermediate front computers 30. The signals that remain are sent to the most significant front computer 20. The exchange of data in the performance of the auction operation is then performed between the front computers 20, 30, 40 and the dealer terminals 50 without the intervention of the host computer 10.

DEPR:
FIG. 4(A) is a table illustrating the numbers of ports to which the leased lines 60, 70 or public telephone lines 80 of the front computers 20, 30, 40 are connected. FIG. 4(B) is a ranking table illustrating the ranking of ports to which arriving POS bid-up signals are input. These tables are stored in the RAM 43 (FIG. 2) of each of the front computers 20, 30, 40.

DEPR:
If POS bid-up signals .circle.1 - .circle.5 are inputted to ports 1-28 in the port number sequence 3, 26, 10, 5, 21 within 300 msec, as shown in FIG. 4(A), three of these POS bid-up signals are sent to the more significant front computer. If there are more than three POS bid-up signals in 300 msec, the ranking table is updated, as shown in FIG. 4(B). More specifically, port numbers 3, 26, 10 stored in the ranking table are updated in ranking to 26, 10, 5, and then to 10, 5, 21, by entry of the bid-up signals 11 .circle.4 , .circle.5 .

DEPR:
When a pledge has been made, the individual making the pledge has the last port number in the POS bid-up signal receiving table indicated in the last row of FIG. 4(B). Therefore, the member I.D. of the person making the pledge is determined by referring to the participant table 5(C) prevailing at the start of bidding, then the participant table 5(B), and then the member I.D. table 5(A).

DEPR:
In the performance of the auction operation, a POS bid-up signal is input at the same time as the start of bidding, and the price is bid up at predetermined increments of e.g. 3000 yen (approximately 20 dollars) whenever a POS bid-up signal is input. A pledge is deemed to have been made, and pledge processing is then executed, when a sell-off price is reached or in response to a sell-off signal issued by the seller. If a POS bid-up signal does not arrive when a predetermined time (a predetermined count) is reached, this is treated as indicating a forfeit and forfeit processing is executed.

DEPR:
In an actual auction operation, a number of POS bid-up signals do not arrive from the dealer terminals 50 at the same time that bidding starts. Rather, as shown in FIG. 6, participants ordinarly observe developments at the start and refrain initially from sending POS bid-up signals. The POS switches 54 (FIG. 3) start to be used after a certain period of time T.sub.0. There are also instances where the participants refrain from taking action until the bidding ends in forfeiture. Accordingly, in the illustrated embodiment, the host computer 10 issues dummy POS bid-up signals SP' in order to promote bidding in the early stages of the auction, as shown in FIG. 6. Whenever the bid-up signals SP' are generated, the price is bid up in predetermined increments. However, since the bid-up signal SP' is a dummy signal to the last, a situation in which a pledge is obtained based on this signal must be avoided. Therefore, as shown in (b) of FIG. 6, measures are taken such as a slowing down of the rate at which the bid-up signals SP' are issued upon passage of a predetermined period of time or when a predetermined count is reached. Thus, the arrangement is such as to arrive at a successful pledge to the greatest

degree possible.

DEPR:
A determination is made at a step 111 as to whether the member I.D.'s have been sent to all of the least significant front computers 40. If a least significant front computer 40 which has not received the I.D. data exists, then the program returns to step 110 and it is again attempted to send the member I.D. data. When the I.D. data have been sent to all of the least significant front computers 40, the host computer 10 transmits auction start time data (D4 in FIG. 20) to the least significant front computers 40 and then transmits acceptance start signal data indicative of terminal line connection (step 113), whereby the program proceeds to auction start processing.

DEPR:
FIG. 10 is a flowchart illustrating the flow of terminal line connection processing for connecting the dealer terminals 50 to the least significant front computers 40 via the public telephone lines 80. At each of the dealer terminals 50, auction is selected by button at a selection screen of the display unit 53 (step 120) and telephone signals are sent from the dealer terminals 50 via the modems 55 (FIG. 3) to place calls to the least significant front computers 40 (step 121).

DEPR:
If the member is not one whose acceptance is forbidden, then it is determined at a step 130 whether bidding is in progress. Since bidding will not be in progress at this point, the least significant front computers 40 send auction start time data (D7 in FIG. 20) to the dealer terminals 50, thereby displaying the time at which the auction is to start. The program then proceeds to auction start processing. If bidding is in progress at the step 130, the least significant front computers 40 transmit data (D10 in FIG. 20) for displaying a picture reading BIDDING IN PROGRESS to the dealer terminals 50 (step 132). The program then proceeds to auction operation processing.

DEPR:
FIG. 11 is a flowchart illustrating the flow of auction start processing. This processing includes a first step 140 at which the host computer 10 transmits an auction start signal to the dealer terminals 50. The signal causes a sound, produced by a buzzer or the like and indicating the start of an auction, to be produced at each dealer terminal 50 at a step 141. Next, the host computer 10 determines at a step 142 whether the auction file contains voluntary cancellation data. If the answer is NO, the program proceeds to auction operation processing; if YES, then the host computer 10 causes the dealer terminals 50 to successively display data (D14 in FIG. 20) indicative of voluntarily cancelled exhibit numbers (step 143). The program then proceeds to auction operation processing.

DEPR:
FIG. 12 is a flowchart illustrating the flow of auction operation processing. When the auction start processing of FIG. 11 ends, the host computer 10 transmits first auction data (D12 in FIG. 20) at a step 150, sends a data display start signal (D13 in FIG. 20) to the dealer terminals 50 at a step 152, and then transmits the next item of auction data (D12 in FIG. 20) at a step 153. Each dealer terminal 50 selects desired basic display picture data stored in the ROM 57 and desired exhibit data, which are stored on a video disk, from the video disk player 52, and these data are displayed on the display unit 53 (step 154) [see (A), (B) and (C) in FIG. 23]. Next, a picture indicative of the seller [FIG. 23(E)]appears as the final picture on the display unit 53 of the exhibiting shop's dealer terminal 50, and a picture indicative of the buyer [FIG. 23(D) is displayed at the other dealer terminals (step 155).

DEPR:
Next, it is determined at a step 156 whether a bidding operation start time has arrived. If such time has arrived, the program proceeds to bidding operation processing. If a picture reading BIDDING IN PROGRESS has been sent

from the least significant front computers 40 to the dealer terminals 50 at the step 132 of terminal line connection processing shown in FIG. 10, then it is determined at step 151 of FIG. 12 whether the next item of auction data is available. If the answer is YES, the program proceeds to the step 152; if NO, then the program proceeds to auction terminal processing. In a bidding operation during an auction, the exchange of data takes place solely between the front computers 20, 30, 40 and the dealer terminals 50 using a predetermined number of bits (seven in the illustrated embodiment), and the host computer 10 does not take part in the data exchange. In a bidding operation, the price is bid up at predetermined increments by the POS bid-up signals from the POS switches 54 (FIG. 3) of the dealer terminals 50. The program proceeds to sell-off processing when a seller issues a sell-off signal or when a sell-off price registered in advance by a seller is reached. In an actual bidding operation, however, the host computer 10 transmits bid-up signals at a predetermined period and the period is slowed down to improve the opportunity for obtaining a pledge [see (a) and (b) of FIG. 6]. A specific example of such processing will be described hereinbelow.

DEPR:
FIG. 13 is a flowchart illustrating the flow of main bidding operation processing. The most significant front computer 20 transmits a start signal (D16 in FIG. 20) at a step 159. This is followed by step 160, at which it is determined whether POS bid-up signals (D20 in FIG. 20) are arriving from the POS switches 54 of the dealer terminals 50. If the answer is YES, a count-up signal (D28 in FIG. 20) for raising the price one step by a predetermined amount is transmitted to the dealer terminals 50, and countdown is cleared (step 161).

DEPR:
If the answer is NO at the step 160, then it is determined at step 162 whether a host bid-up signal (D26 in FIG. 20) is arriving from the host computer 10. If the answer is YES, the aforementioned price count is incremented at a step 163. If the answer at the step 162 is NO, then it is determined at step 164 whether a pre-slowdown signal is arriving. It the answer is YES at this step, then a pre-slowdown mode is established at step 165. If a pre-slowdown signal is not arriving, it is determined at a step 166 whether terminal slowdown signals (D24 in FIG. 20) are arriving from the exhibiting dealer terminals 50. If the answer is YES, then a terminal slowdown processing mode is established at a step 167. If the answer is NO, on the other hand, then it is determined at a step 168 whether a super terminal slowdown signal (D24 in FIG. 20) is arriving from the super terminal 21 (FIG. 1). If the answer is YES, a super terminal slowdown processing mode is established at a step 169. If the answer is NO, then it is determined at a step 170 whether a sell-off signal (D19 in FIG. 20) is arriving. If the answer is YES, the program proceeds to sell-off processing at step 171; if NO, then it is determined at step 172 whether the bidded up price has reached the sell-off price. If it has, the program proceeds to sell-off processing at a step 173. If the bidded up price has not reached the sell-off price, then it is determined at step 174 whether the countdown dependent upon the countdown signal (D23 in FIG. 20) is a predetermined countdown value corresponding to bidding decision time. (In the illustrated embodiment, the countdown value is a count of ten, and one count corresponds to 300 msec.) If a YES answer is received at the step 174, the program proceeds to forfeit processing at step 175; if the answer is NO, then the program returns to the step 160 to repeat the above processing.

DEPR:
FIG. 14 is a flowchart illustrating the flow of sell-off processing (steps 171 and 173 in FIG. 13). Sell-off processing includes a step 180 of halting the POS bid-up signals, and a step 181 of determining whether a POS bid-up signal has been picked up. If the answer at the step 181 is YES, then a sell-off signal is issued at a step 182 and the countdown is cleared at a step 183. In this case, nothing appears on the screen of the display unit 53.

DEPR:
Next, it is determined at a step 184 whether a POS bid-up signal is arriving.

If the answer is NO, it is determined at a step 186 whether the countdown is a predetermined value (seven in the illustrated embodiment); if YES, then the program proceeds to pledge processing at a step 187.

DEPR:
If a POS bid-up signal is found to be present at the step 184, then the countdown is cleared and the program returns to the step 184. If the countdown is found not to be the predetermined value at the step 186, then the program likewise returns to the step 184.

DEPR:
If a POS bid-up signal is not picked up at the step 181, then an abandon signal is issued at step 189, the countdown is cleared at a step 190, and it is determined at a step 191 whether a POS bid-up signal is present. If the answer is YES, then the program proceeds to the step 182 and processing similar to the foregoing is executed.

DEPR:
FIG. 15 is a flowchart showing the flow of super terminal slowdown mode processing. The first step (step 200) calls for the super terminal 21 (FIG. 1) to transmit a slowdown mode signal (D24 in FIG. 20). Next, it is determined at a step 201 whether a POS bid-up signal has been picked up. If the answer is NO, it is determined at a step 202 whether a POS bid-up signal is present. If the answer at the step 202 is YES, then the price is incremented and the countdown is cleared at a step 203. At the same time, this fact is displayed on the display unit 53 of the dealer terminal 50.

DEPR:
If a POS bid-up signal is not present at the step 202, then it is determined at a step 205 whether a host bid-up signal has arrived. If the answer is YES, then the price is incremented and the countdown is cleared at a step 206. In this case, nothing is displayed on the display unit 53.

DEPR:
When a POS signal is picked up at the step 201, or when the processing for incrementing the price ends at the step 203, the host bid-up signal is terminated [(a) in FIG. 6]and a sell wait signal is issued at step 210. Next, it is determined at step 211 whether a sell-off signal has arrived. If the answer is YES, the program proceeds to sell-off processing at a step 212; if NO, it is determined at step 213 whether there is a sell-off price. If the answer is YES at the step 213, the program proceeds to sell-off processing at the step 212; if NO, it is determined at step 214 whether a POS bid-up signal is present. If the answer is YES, then the price is incremented, the countdown is cleared (step 215) and the program returns to the step 211. In this case, a display appears on the display unit 53.

DEPR:
If a POS bid-up signal is not present at the step 14, it is determined at a step 216 whether the countdown is ten. If the answer is NO, the program returns to the step 211; if YES, then the program proceeds to forfeit processing (step 209).

DEPR:
FIG. 16 is a flowchart illustrating the flow of terminal slowdown-mode processing. In terminal slowdown-mode processing, the exhibiting dealer terminals 50 transmit slowdown signals (step 220), and it is determined whether a POS bid-up signal has been picked up (step 221). If the answer at the step 221 is NO, then it is determined whether a POS bid-up signal is available (step 222). If the answer is YES, the price is incremented and the countdown is cleared. In this case, the fact is displayed on the dealer terminal 50 (step 223).

DEPR:
If there is no POS bid-up signal at the step 222, then it is determined whether there is a host bid-up signal (step 224). If the answer at the step

224 is YES, then the price is incremented and the countdown is cleared (step 225). If there is no host bid-up signal at the step 224, it is determined whether there is a sell-off signal (step 226). If there is no sell-off signal, it is determined whether the countdown is a predetermined value (step 227). If the answer at the step 227 is NO, the program returns to the step 221.

DEPR:
If there is a sell-off signal at the step 226, the program proceeds to sell-off processing (step 231). If the answer at the step 227 is YES, the program proceeds to forfeit processing (step 228). If a POS signal is not picked up at the step 221, or if the processing for incrementing the price and clearing the countdown at the step 223 ends, the host bid-up signal is terminated and a sell wait signal is issued (step 229). Next, it is determined whether there is a sell-off signal (step 230). If there is, the program proceeds to sell-off processing (step 231); if there is no sell-off signal, then it is determined whether there is a sell-off price (step 232). If there is a sell-off price, the program proceeds to sell-off processing (step 231); if not, it is determined whether there is a POS signal (step 233).

DEPR:
Next, the member I.D. (D31 of FIG. 20) of a successful bidder is transmitted to the dealer terminal 50 (step 242), it is determined whether a confirmation signal (D34 in FIG. 20) has arrived from the successful dealer terminal 50 (step 243). If the confirmation signal has arrived, it is written in a result file of the host computer 10 (step 244); if not, the system waits for three minutes (step 245) before the program proceeds to the next item of auction operation (step 151 in FIG. 9). When the write-in of the confirmation signal at the step 244 ends, it is determined whether the corresponding successful dealer terminal 50 has exceeded a price ceiling (step 246). If the answer is NO, the program proceeds to the next auction operation (step 151 in FIG. 9). If the price ceiling has been exceeded, a message (D36 in FIG. 20) reading PRICE CEILING EXCEEDED is sent to the corresponding dealer terminal 50 (step 247) and the program proceeds to the next auction operation.

See Fig. 18

DEPR:
FIG. 19 is a flowchart showing the flow of auction termination processing. In this processing, a message reading END OF AUCTION (D41 in FIG. 20), indicating that the auction has ended, is displayed at each dealer terminal 50 (step 250). Next, it is determined whether any confirmation signal has not arrived and the system waits for three minutes (steps 251, 252). In the absence of a confirmation signal, the host computer 10 sends an initial reset signal (D40 in FIG. 20) to the most significant front computer 20, intermediate front computers 30 and least significant front computers 40 (step 253), whereby the auction information transmission system is shut down.

DEPR:
FIG. 21 is a flowchart illustrating the flow of POS bid-up signal selection processing in the front computers 20, 30, 40. When bidding has started, it is determined whether POS signals are arriving (step 301). If POS signals are arriving, it is determined how many times they arrive in 300 msec (step 302). If a POS signal arrives once, a seven-bit price-up signal .circle.1 of the kind shown in FIG. 22 is transmitted; if the signal arrives twice, the price-up signal .circle.2 is transmitted; if the signal arrives three times, the price-up signal .circle.3 is transmitted (steps 303, 304, 305). If the signal arrives four or more times, the price-up signal is not transmitted (step 306). Next, the port number of the ranking table is updated (step 307 [see FIG. 4(B)]. If a NO answer is received at the step 301, it is determined whether time is up (step 308). If the answer at the step 308 is NO, the program returns to the step 301; if YES, the program proceeds to pledge processing or forfeit processing.

DEPR:
In accordance with the illustrated embodiment as described above, an auction information transmission processing system is constructed by connecting the single most significant front computer 20 to the host computer 10, connecting

the plurality of intermediate front computers 30 and the plurlity of least significant front computers 40 to the most significant front computer 20 via the leased telecommunication lines 60 and 70 in a tree-like configuration, and connecting the plurality of dealer terminals 50 to each of the least significant front computers 40 via the public telephone lines 80. As a result, the system can be utilized with ease without widely scattered auction participants gathering at a single location.

DEPR:
Further, in each of the dealer terminals 50, pattern data indicative of basic display pictures of the kind shown in FIGS. 23(A)-(E) are stored in the ROM 57, and various data relating to the used cars submitted for auction are stored on laser disks, which can then be distributed in advance as by a private delivery service. Therefore, when an auction is held, the host computer 10 need only issue a signal which causes the basic display picture data and used car data to be looked up, and it is unnecessary for the host computer 10 to send these data to the dealer terminals 50. As a result, the amount of data transmitted can be greatly reduced.

DEPR:
By the time bidding starts, the host computer 10 transmits the data necessary for holding an auction, such as line connection data and registered member data, through an ordinary transmission procedure. After bidding starts, the exchange of signals between the front computers 20, 30, 40 and the dealer terminals 50 takes place without the participation of the host computer 10. Moreover, each of the front computers selects a predetermined number solely of the bid-up signals within a predetermined period of time and these signals are sent as signals having the minimum number of bits to the front computers of higher significance. This results in a further reduction in the amount of data processed among the front computers, thereby shortening even further the time needed for data transmission processing. Accordingly, auction participants scattered over a wide area need not gather at a predetermined location, as in the prior art, and these persons can participate on a real-time basis without leaving their own locations.

DEPR:
Since the amount of transmitted data is greatly reduced and the data are transmitted as signals having a small number of bits, lines having a small capacity can be utilized as the leased telecommunication lines 60 and 70. This makes it possible to construct the auction information transmission processing system very inexpensively.

DEPR:
Though the above-described embodiment relates to an auction of used cars, the auction information transmission processing system is not limited to used cars but can be applied to the auctioning of various articles.

DEPR:
Further, in the aforementioned embodiment, each dealer terminal 50 is provided with the display unit 53 and laser disks storing the article data are distributed by a private delivery service. However, the method through which these data are stored in each dealer terminal 50 is not limited to the above. A variety of storage means, such as magnetic storage devices, can be used as a matter of course. In addition, the article data can be stored in the dealer terminals 50 by utilizing an artificial communications satellite or the like to transmit the data to the dealer terminals 50. In such case, the article data can be transmitted to the dealer terminals 50 whenever an auction is held, and bidding can proceed while the data are displayed on the display screens.

DEPR:
According to the invention as set forth above, each dealer terminal of the auction information transmission processing system is provided with a storage device in which data indicative of the article to be auctioned off are stored in advance. When an auction is to be held, therefore, the host computer need

only transmit a signal which causes these data to be looked up. This makes it possible to reduce the amount of data transmitted by the host computer. By the time bidding starts, the host computer transmits the data necessary for holding an auction, such as line connection data and registered member data, through an ordinary transmission procedure. After bidding starts, the exchange of signals between the front computers and the dealer terminals takes place without the participation of the host computer. Moreover, each of the front computers selects a predetermined number solely of the bid-up signals within a predetermined period of time and these signals are sent to the front computers of higher significance. This results in a further reduction in the amount of data processed among the front computers, thereby shortening even further the time needed for data transmission processing. Accordingly, auction participants scattered over a wide area need not gather at a predetermined location, as in the prior art, and these persons can participate on a real-time basis without leaving their own locations.

CLPR:
1. In an auction information transmission processing system constructed by connecting a most significant front computer to a host computer, arranging at least one stage of a plurality of intermediate front computers and a plurality of least significant front computers so as to be connectable to said most significant front computer in a tree-like configuration via communication lines, and arranging a plurality of dealer terminals so as to be connectable to each of said least significant front computers via communication lines, an information transmission processing system characterized in that each of said dealer terminals has basic pattern data storage means storing pattern data indicative of basic display screen pictures and exhibit data storage means storing data peculiar to articles on exhibit at an auction, and wherein when the system is started up, said host computer transmits a line connection signal to said front computers, wherein said host computer is connected to each of said front computers, said host computer then transmits auction data such as member registration data to said least significant front computers and said auction data are stored in these least significant front computers, said dealer terminals and said least significant front computers are connected, and data are extracted from said basic pattern storage means and said exhibit data storage means of said dealer terminals, and said extracted data are displayed on corresponding display screens, in response to a command from said host computer.

CLPR:
2. The information transmission processing system according to claim 1, characterized in that after bidding starts, each of said front computers, in response to a command from said host computer, selects a predetermined number solely of bid-up signals, input thereto in a predetermined period of time, from each of said dealer terminals and transmits these signals to a front computer of higher significance, said most significant front computer selects only a predetermined number of bid-up signals input thereto in a predetermined period of time and bids up a price of an exhibit being auctioned, and after a pledge to buy an exhibit is made, said least significant front computers identify pledging members based on the member registration data, and data indicative of these members are transmitted to the front computers of higher significance.

L2: Entry 12 of 14 File: USPT May 12, 1998

DOCUMENT-IDENTIFIER: US 5749785 A
TITLE: Communications system using bets

DEPR:
A Placer and Acceptor schema is not limited to just two parties. There may be more than one party that accepts a first person's offer. There may be a selection procedure, such as an auction, to select who will be the Acceptor. The point is that Placer and Acceptor are generic names for the idea of an offer that is first presented by one party and then accepted by another.

DEPR:
2. Auction methods.

DEPR:
9.3b Auction Methods

DEPR:
As the name implies, an auction method means that Jim auctions his offer to the highest bidder. The bet is struck with the highest bidder, that is. (There can be arbitrary rules for breaking tie bids.)

DEPR:
When he chooses an auction method, Jim enters an offer in which he sets a minimum price he will agree to and in which he sets a deadline for bids.

DEPR:
(Technically, it is possible to do an auction without Jim entering a minimum bid. But, we will assume that Jim must enter a minimum bid because this will likely be the more prevalent way that auctions are done.)

DEPR:
There are two basic kinds of auctions: open and silent. In an open auction the bidders' price offers are displayed, while in a silent auction the bids are not displayed until the deadline closes. The CSUB enables Jim to choose either kind of auction. The CSUB also enables Jim to choose whether or not to keep his minimum price secret until the deadline closes. This option of a secret minimum by Jim doubles the auction possibilities:

DEPR:
Bidders, if there are any, submit price bids and take the side opposite Jim's. When the deadline closes the CSUB checks which bid is highest, from Jim's point of view, and strikes the bet between Jim and the highest bidder.

DEPR:
We presume that the bet seals at the same time it is struck, at the close of the bidding deadline. Up until that time anyone may change a price offer. Thus we see that an agreement clock is used and that it is the same clock that is used for the submission of bids. There are innumerable different ways of sealing of bets, but in the case of auctions, a single deadline that applies to all bidders seems to be one of the simplest and fairest.

DEPR:
By registering and displaying the various bids, the CSUB provides another way

of showing a spectrum of offers about a given bet statement.

DEPR:
So the CSUB includes options for selecting any of four auction methods by which Jim can present an offer to the community and by which that offer can be struck. Below we give steps for an open auction method where all price offers are displayed. The main difference between this method and the others is just the steps for the displaying or hiding of prices.

DEPR:
Open Auction Method Where No Prices Are Hidden

DEPR:
The CSUB includes the following steps for enabling a user to auction his bet offer using an open auction where all price offers are displayed:

DEPR:
input and store a first user's designation of an open auction offer where all prices are displayed,

DEPR:
input the first user's bet statement, choice of side, stake, minimum bid, and deadline for submission of bids,

DEPR:
display the bet offer, including the auction designation, the minimum bid requirement and the deadline,

DEPR:
if the deadline has not expired, check if a user (a bidder) has entered a Bid command since the last time the deadline was checked,

DEPR:
if no Bid command has been entered, return to step of checking if deadline has expired,

DEPR:
if a Bid command has been entered,

DEPR:
if no bids have been entered, register in the UBSR of the first user that no bids have been entered,

DEPR:
if no bids have been entered that are equal to or better than the first user's minimum price, register in the first user's UBSR that no strikeable bid has been entered,

DEPR:
if one or more bids has/have been entered that is/are equal to or better than the first user's minimum price,

DEPR:
Auction Options for Bidders

DEPR:
Now the CSUB can allow a bidder to choose the market option of an auction as well. In other words, Beth can enter a bid for Jim's offer but at the same time designate that she will take the best offer she can get before the deadline passes. (We assume, for simplicity's sake that the same deadline applies to Jim's and Beth's auction offers.)

DEPR:
However, when there are multiple bidders on each side choosing the auction option, problems can crop up in deciding which offers are to be struck and at

what price. That's because there is no single reference price being bid at. Say that all the offers below are silent and are minimum prices offers and are designated to be auctioned off to the highest bidder. How then are the offers to be struck and at what price?

DEPR:
Arbitrary rules can be set. For example, the system can strike strikeable offers randomly. (Another fair method is described in the next sub-section.) There is a great variety of possible procedures for deciding whose offer to strike with whose. The variety is too great to describe. All we can say is that some procedures are necessary because users will often enter the auction option in order to possibly get a better deal.

DEPR:
(Note: All four auction options will not be available to a bidder because by bidding for Jim's offer she will have already chosen to display or hide her price. But the point remains that the CSUB can enable her to designate the auction option.)

DEPR:
Thus the CSUB includes the following steps for enabling a user to present his bet offer using a silent bid method where any overlap in prices is split between the two parties to the bet:

DEPR:
The CSUB can enable multiple people, call them Jim, Beth, Denise and Angel, to use the split-it method. By that we mean that multiple people enter price offers on the same bet statement. The offers are all hidden until the deadline, which is set by the person, say it is Jim, who first enters the bet statement and chooses the split-it option. The CSUB can enable Jim to designate a group split-it option, which signifies that multiple people can enter offers to be potentially struck. This designation is displayed along with the bet statement and Jim's terms (except his price offer). Other people can then respond to the bet statement and enter their own hidden prices. Note then that Beth, Angel and Denise are not responding just to Jim's initial bet offer. They are responding to Jim's bet statement and the split-it option that applies. In other words, they have all chosen to enter a kind of silent bid process, which is not a conventional auction.

DEPR:
One advantage of having multiple people enter silent offers is that when prices are revealed, the system can show another kind of spectrum of prices that reflects peoples' probability estimates, a spectrum that results from this kind of silent bid process.

DEPR:
The CSUB can register a standard fee determined by CSUB rules, or it can enable Jim to set the fee, or it can enable Jim to designate an auction where the Beth with the highest fee bid gets to be the Acceptor. The CSUB can also enable Jim to designate when the fee, if any is owed, is to be paid.

DEPR:
However, if Jim sets the fee or holds an auction, and the fee goes to him, then the fee really seems like a stake, which makes the G-bet really a P-bet. We will assume then that if Jim sets the fee, or if he chooses an auction option, that he can also direct that the fee is to go to a neutral third party, (subject perhaps to Beth's approval). Thus the CSUB can include the feature of enabling Jim to designate a directed fee, and to state, in a field in the UBSR, where the fee is to go. The CSUB can then send the fee there or hold it in escrow to be collected by the designated third party.

DEPR:
2. The auction method,

DEPR:

2. The Auction Method for G-Bets

DEPR:
Many people may want to be the Acceptor of Jim's G-bet for there can be value in the right to get Jim's stake. It all depends on how likely people think it is that Jim's bet statement is false. Since more than one person may be interested in being the Acceptor, the CSUB can enable Jim to auction off the right to his stake.

DEPR:
The auction method for G-bets is directly analogous to that of P-bets. As with an auction of a P-bet offer, Jim sets a deadline for submitting bids. The person who submits the highest fee bid becomes the Acceptor. (As noted, the fee goes to a third party.) The CSUB can also create a queue of potential Acceptor's who are listed in order of their bid amounts.

DEPR:
An auction can have several advantages over other acceptance methods. Assuming that the auction is an open one, it allows Jim and other people to see the community's reaction to his bet offer better than other acceptance methods do. That's because if only one person can be the Acceptor then other people will often not bother to respond to the offer. But an auction gives numerous people the chance to respond and lets the CSUB show what these people would be willing to pay for the right to possibly get Jim's stake. Depending on the interest in the auction, the competition of bidders can force people to submit fee bids that tell more about the value of accepting the G-bet than a standard fee would. Further, as noted, the CSUB can convert the fee bids into probability figures and display these.

DEPR:
The first to file method can be used in conjunction with the first serve or auction or divide the pot methods, if these methods have a time limit applied. In the case of a time limit, an existing Acceptor, Beth, can be displaced by a first to file Acceptor, Denise, only if Beth has not entered a bet result by the deadline. If Beth fails to enter a bet result by the deadline, Denise jumps to the head of the queue of people who want to accept the G-bet, presuming Denise is the first to file. In other words, under a first to file method, once an existing deadline runs out, the CSUB gives precedence to Acceptors with evidence over Acceptors who do not have evidence. The CSUB can also create a queue of users who have evidence of a bet result.

DEPR:
Certain market options, such as auction procedures, can also afford Jim protection from more knowledgeable people.

DEPR:
Two, the sale is a straight sale and not an auction. (Auctions can be useful, and we note that the CSUB can enable Jim to offer his position for sale in an auction. The CSUB can enable him to set a minimum bid figure and a deadline for bids. The CSUB can also enable him to simply post a "make best offer" message and wait for an offer he is satisfied with.)

DEPR:
The buyer and seller may agree to a maximum amount that is at risk-a ceiling on how much each can lose.

DEPR:
Ceiling

DEPR:
inputs and stores the ceiling,

DEPR:
if Transfer Amount is greater than the Ceiling, sets the Transfer Amount equal to the Ceiling (while maintaining the sign of the Transfer Amount),

DEPR:
As with a delta bet, the two parties in the 3D bet can set a ceiling on the amount they can win or lose.

DEPR:
Ceiling

DEPR:
inputs and stores the ceiling,

DEPR:
if Transfer Amount is greater than the Ceiling, sets the Transfer Amount equal to the Ceiling (while maintaining the sign of the Transfer Amount),

DEPR:
Market options for Q-bets are basically the same as those for P-bets. The essential differences between P-bets and Q-bets are in the definitions of price and better price. These differences cause minor differences in the procedures for striking bets. However, these differences are superficial as far as market option for presenting bet offers are concerned. The same situations arise with P-bets and Q-bets, and therefore, the same procedures are employed in enabling people to present P-bet and Q-bet offers. In other words, the three categories of market options remain: the first serve method, auction methods, and the split-the-difference method.

DEPR:
Auction Methods

DEPR:
Auction methods for Q-bets are the same as those for P-bets except that the definitions of better price are different. To repeat, the differences are superficial. In an auction, the system still selects the best price offer above the user's bottom line.

DEPR:
Where bidders choose the auction option as well, the same problem remains of how to strike offers when multiple different offers can strike.

DEPR:
In a conventional market there is what is called the market price. For example, a stock might be selling at a market price of $80. The market price has some wiggle room in it , the spread between bid and ask. But basically the spread, at least in most financial markets, is usually quite narrow. The principle of market price applies to betting markets as well, where the market price is called the line. Here too there is some wiggle room between bid and ask, but again, the spread is usually quite narrow.

DEPR:
The spectrum enables the CSUB to show the distribution of offers for a given bet statement. For example, let us say that a bunch of weather forecasters get together to make bets whether it will rain on the statement, It will rain on October 1. The bets may be submitted by silent auction. When the offer are revealed, the CSUB can display all the various payoff offers submitted. Whether any offers are struck or not is beside the point. The CSUB can show, say, what fraction of forecasters offered 10% or more on True, what fraction offered 11% or more, what fraction offered 12% or more, and so on. Of course there can be actual odds bets, in which case the CSUB can show what fraction of forecasters gave actual odds offers at each percentage between 0% and 100%.

DEPR:
The method described here requires a divisional application, for it does not concern statement bets. It is a registration and auction system for a particular kind of investment agreement, which we call a venture capital bet

(VCB). VCB's do not only apply to venture capital situations; they can be used for financing in general. However, it is in "high risk" situations where the advantages of VCB's seem greatest.

DEPR:
An automated computer system for registering VCB's enables Ken and Dors to post the terms of VCB offers and to post the assumptions behind those terms. We describe the essential data fields necessary for the posting of offers and then describe additional "assumption" fields. We will, for simplicity's sake, say that Ken is posting an offer. We will call the registration and auction system simply by the name "the system."

DEPR:
More important perhaps, the system can enable Ken to auction his VCB offer to the highest bidder in an initial public offering. Thus the system can enable Ken to post an offer and set a deadline for bids. The system then registers payoff amount bids from various investors. The system selects the lowest bid offered by the deadline and registers the striking of a deal between Ken and the investor who offered that amount. The auction can be open or silent. This automated auctioning of a VCB is new way to present and strike an investment deal.

DEPL:
assigning the bidder the side opposite the first user's side, and setting the bidder's stake such that the bidder's stake and first user's stake are in a ratio equal to that set by the payoff odds of the bidder's bid,

DEPV:
input the bidder's bid (price offer),

DEPV:
create a bet offer for the bidder using the bidder's bid, and

DEPV:
display the bidder's bid,

DEPV:
stop inputting bids,

DEPV:
check if any bids have been entered,

DETL:
_____ Jim's Minimum Price Bidders' Bids
_____ 1. Displayed Displayed 2. Displayed Hidden 3. Hidden Displayed 4. Hidden Hidden.

DETL:
_____ Bet Statement: It will rain tomorrow in London. Stake: $100 Side: True Market Option: Open auction Minimum Bid: 1-1 Minimum Bid Displayed?: Yes Deadline: 4:00 PM today, Greenwich time.

WEST

Generate Collection

L2: Entry 8 of 14 File: USPT Oct 10, 2000

DOCUMENT-IDENTIFIER: US 6131087 A
TITLE: Method for automatically identifying, matching, and near-matching buyers and sellers in electronic market transactions

BSPR:
Existing electronic systems for selling fungible goods, futures contracts, options, and commodities most closely resemble an auction market. U.S. Pat. No. 3,581,072 to Nymeyer (1971) discloses a digital computer that matches orders and establishes market prices in an auction market for fungible goods. The computer generated automatic market pricing of goods, corrected for unpriced bids, recorded the transactions, and minimized human judgment in price calculations. As disclosed, this system suffers from serious omissions. First, price is the only transaction criteria used to determine compatibility of offers. Second, the computer does not accommodate users' internal computer and telecommunications systems. Third, the system completely omits logistics concerns from the assessment of compatibility. Fourth, the system does not accommodate differing payment terms among various buyers and sellers.

BSPR:
U.S. Pat. No. 4,789,928 to Fujisaki (1988) describes an auction information processing system. It allows buyers scattered over a wide area to participate in an auction in real-time and without gathering at an auction site. Several computers are linked by telephone lines and arranged in a hierarchical structure to expedite data transmission. These data consist of signals from a host to dealers and signals from various dealers and front computers to the host. The host conducts the auction by signaling start times, end times, and sell-offs. The dealer and front computers transmit bid signals from auction participants through several layers of front computers to the host. Product information is stored at the dealer level on laser discs. Price is determined by the competitive bidding occurring at the dealer level.

BSPR:
Like Nymeyer, Fujisaki does not address the other components of the transaction electronically. In an auction market the participants presumably know the rules or have made arrangements for delivery and payment; hence, these considerations are not a factor in the system. The auction market requires some planning as well. Sellers must transmit their product information well in advance of the auction itself. The system is not capable of accepting products for sale in real time. Additionally, the Fujisaki disclosure describes a market where one seller at a time markets to many buyers, and only one transaction may be completed at a time.

BSPR:
Prior art related to automated trading exchanges, like U.S. Pat. No. 4,903,201 to Wagner (1990) match bids to buy and sell on the basis of price and the terms of commodity contracts. Such disclosures are not designed to facilitate contract formation; thus, these disclosures do not provide a means for negotiation of terms. Likewise, such disclosures are not designed to facilitate contract execution. Thus, these disclosures do not provide a means for facilitating performance of a contract.

DEPR:
FIG. 4 illustrates the process of creating a firm contract within the matching

system. When the exchange participant and the originator of the offer data reach agreement on the particulars of an exchange 60, each originator signals 70 the account registry 100 to inform the system of an impending contract formation. The account registry 100 then queries its records to determine the destination of confirmation messages from the matching system to the participants' supervisor agents. The account registry 100 contains a hierarchy of registered agents and the limitations of each agent's authority within the system. Limits upon the agents' authority may be expressed in terms of monetary floors or ceilings, specific product ranges, particular periods of time, and designated geographic regions. In the preferred embodiment, agents' authority limitations are expressed in real numeric values.

ORPL:
Wilder, Clinton, "What's Your Bid?", Information Week, Issue 656, pp. 54-60, Nov. 10, 1997.

WEST

Generate Collection

L1: Entry 11 of 23 File: USPT Feb 8, 2000

DOCUMENT-IDENTIFIER: US 6023685 A
TITLE: Computer controlled event ticket auctioning system

ABPL:
An automated event ticket auctioning system receives and evaluates bid information records received from a plurality of remote terminals. The bid information records correspond to bids for one or more seats within a venue and corresponding to at least one particular event, wherein the venue has a plurality of sections, each section having a plurality of seats. The automated event ticket auctioning system includes a memory storing a plurality of previously accepted bid information records, the previously accepted bid information records each including identification information, section identification, quantity information and bid price information. The system further includes a central controlling computer operably connected to the memory. The central controlling computer is operable to first receive a message including a received bid information record from one of a plurality of remote terminals through a communication system. The received bid information record includes received identification information, received section identification, received quantity information, and received bid price information. The central controlling computer is further operable to determine a lowest minimum acceptable bid value corresponding to the received section information using the previously accepted bid information records stored in the memory, and store the received bid information record if a value represented by the received bid price information exceeds the lowest minimum acceptable bid value. The automated event ticket auctioning system further includes a programmed graphical representation method designed to efficiently convey to auction participants useful standing bid information across the entire event venue, allowing seat bid price locations to be quantified in an effective manner. The system further includes programmed methods for ensuring contiguous grouping of seat location within each multiple ticket bid, and for ensuring that the standing bid information is automatically updated on a real-time basis and presented as such to all auction participants.

BSPR:
The present invention relates to a system that uses communication lines connecting participants from various locations, such as personal computers connected via the internet, to a central computer which conducts a real-time auction of tickets to sporting and entertainment events.

BSPR:
A few auction systems have been developed that operate using the internet as the communications mode. These systems have been used to auction items such as computer equipment, artwork, and special items for charity. However, these systems are not suitable for use in connection with a real-time mass auction of event tickets. With the currently operating systems, generally the items being sold are of a small quantity or individually unique. In most of the currently operating systems, the items for sale are individually listed, and individually bid upon using e-mail over a period of days or weeks. While, the currently operating systems are useful for such limited purposes, they have several shortcomings.

BSPR:
One such shortcoming arises from the use of e-mail to place bids and to update

participants of their bid status. While in theory e-mail is instantaneous, there are occasional routing delays of which the sender is often not immediately aware. In an auction of a slow, deliberate nature such as those presently operating, this is not a great concern. However, in a fast pace auction with numerous participants some bids could be lost as delayed e-mail, unbeknownst to the participant.

BSPR:
An additional problem with the e-mail approach is that time may elapse before the bid information is read and applied. Therefore, the participant may not get instantaneous feedback on other bids which may be taking place simultaneously. The participant often must wait for some period of time to learn if the bid is successful. If the participant has a strategy for bidding on a very desirable item, the participant must return to the auction numerous times to follow its progression.

BSPR:
Currently operating systems do not provide bid status information updates independent of solicitation of the information from participants. Once the internet auction site is accessed, the information conveyed may become outdated as it is being viewed. Again this would be quite unfavorable for fast-paced auctions. Therefore, even with auction sites which were actually being updated real-time, a participant would need to continually re-access the site in order to keep information truly updated.

BSPR:
One internet auction system, "onsale" at http://www.onsale.com/ attempts to overcome the e-mail auction problems by automatically updating its internet site. However, like the other internet auction sites, onsale conducts relatively slow, deliberate sales, and still relies on e-mail to transmit some of the bid information. In addition, although the onsale auction site is automatically updated, it does not automatically present this information to participants. As explained above, participants need to continually re-access the site in order to keep information truly updated.

BSPR:
U.S. Pat. No. 4,689,928 details an auction system for used cars that is capable of interactive, essentially real-time auctioning. Instead of internet based, this used car auctioning system is constructed with a 4-level hierarchy of computers networked to a plurality of auto dealers terminals. At each level, the bids received by the computer are processed and only select bids are transmitted to the next level. The bids are raised in increments of 3000 yen and the participants may bid via a single signal indicating a "yes" in response to the bid being raised. This system is based on the traditional auction format, and is used to sell one item or lot at a time. When a car has been auctioned, a disc is loaded by each dealer into his terminal which shows the photograph of the next car to be auctioned. Bidding is limited to a predetermined group of auto dealers. Because the structure of this system is hierarchical, i.e. not on the internet, it is not practical for use in wide-spread auctions available to consumers. Because of the methodical nature of this system, selling a progression of single items with incremented bids, it is geared for low volume sales of items with relatively high values.

BSPR:
Recently tickets have been made available for purchase on the internet, for example at http.www.ticketmaster.com/ but not in an auction format, as is needed to sell certain tickets at their market prices. At this internet site, sales are of the traditional pre-set pricing, "first-come-first-served" format.

BSPR:
Considering the selling of a large number of tickets to an event, there are unique circumstances which present challenges not manifested in selling other items. For example, in a particular auction, all the tickets may be for the same venue, date, time, and performance. However, each of these tickets also

possesses the very unique characteristic of seat location. This characteristic can dramatically effect the ticket value. Ticket values typically vary widely, yet in a continuum from closest to farthest from the performance area. Thus, it is not practical to mass the tickets into simple generic blocks to be auctioned. Nor is it practical to list and auction each ticket individually, since this could present auction participants with a prohibitively large number of individual auctions, and no practical way to obtain contiguous seats. Accordingly, there exists a need for a system which can, within a single, clear format, auction a large number of items with a continuum of values, each at its market price. Furthermore, this system needs to apply logic in sorting bids based not only on price, but on clustering requirements to ensure that within a multiple-ticket bid, the seats are adjoining. This would require a database configuration unlike that employed by the prior art.

BSPR:
Moreover, given the furious pace of sales for many premium tickets, there exists the unique and as yet, unmet challenge of providing instant, automatic, comprehensive feedback for status of a relatively complex arrangement of standing bids. Frequently the more popular sporting and entertainment events sell all available tickets in a matter of a few minutes. The number of tickets to these events may reach into the hundreds of thousands. A practicable auction of tickets for such an event would require a system uniquely designed to process this large volume while presenting an updated, clear and informative view of the proceedings to all participants. It would be logical to presume that efficient conveyance of bid information for a large, complex pattern of bids would require a graphical representation of the bid standings. Although some internet auctions employ graphical representation of objects for sale, none employ graphical representation of bid status.

BSPR:
The automated event ticket auctioning system further includes a programmed graphical representation method designed to efficiently convey to auction participants useful standing bid information across the entire event venue, allowing seat bid price locations to be quantified in an effective manner.

BSPR:
The system further includes programmed methods for ensuring contiguous grouping of seat location within each multiple ticket bid, and for ensuring that the standing bid information is automatically updated on a real-time basis and presented as such to all auction participants; said programmed method employing HTML programming features such as the recently available META refresh (a client pull type browser directive) or the multipart/mixed MIME format (a server push type browser directive).

BSPR:
Participants may access this system from remote sites using terminals such as personal computers, via telephone lines or other means of communication. The status of bids and seat locations are conveyed on graphic displays of the venue seating arrangement which are updated on a real-time basis for all participants to view. Participants may place bids of any amount, subject to pre-determined limits, and cancel, raise, or lower bids at will. In addition, participants may view their personal bid standings and the updated overall bid standings without having to continually re-access the auction site. Through the participants' remote terminals, the personal bid requests are sent to the host computer which immediately processes, and sorts the bids according to section and price. The central computer immediately updates and displays the new bid standing order. When the auction is closed, the bids become fixed and the physical transaction can occur.

DRPR:
FIG. 4 is a flowchart illustrating an exemplary auction procedure used in a system built in accordance with the present invention.

DRPR:
FIGS. 5a and 5b is an exemplary representation of the main auction database

storing the order of bids received.

DRPR:
FIG. 9 is an example of the participant's terminal screen, as it might appear before the beginning of an auction. The terminal displays a graphical representation of the venue of seats to be auctioned and the pre-set minimum bid price of those seats.

DRPR:
FIG. 10 is an example of the participant's terminal screen, as it might appear during an auction. The terminal displays a graphical representation of the venue of seats to be auctioned, the present bid price of those seats, and the personal bid standing for this particular participant.

DEPR:
Accordingly, consumers wishing to become participants in an upcoming auction may access the central computer 12 of FIG. 1 through any remote terminal 14.sub.1, 14.sub.2, 14.sub.3 . . . 14.sub.n to receive a wide variety of information about the auctions, the related events, venues, performers or teams, schedules, and merchandise; and to pre-register for the auction and payment. The registration process is represented as step 24 in FIG. 2. Next, as FIG. 2 illustrates, the auction operation 25 is executed; the transactions 26 take place, and the system is ended 27. These steps are described in more detail below.

DEPR:
Referring again to FIG. 1, registration and bid information originating in the remote terminals 14.sub.1, 14.sub.2, 14.sub.3 . . . 14.sub.n is transferred via the communication system 13 and received by the central computer 12. The central computer 12 processes said information and stores it in databases: specifically, the participant database 15 for registrations and the main auction database 16 for bids. The central computer 12 also performs sorting and indexing operations, described below, necessary to keep the information in the databases current and correctly ordered. The central computer 12 processes and controls the information flowing between the internet sites and the databases with programming written in C++ language. Registration information may be received and stored before and during operation of the auction. The participant database, represented by FIG. 7 contains the name, address, and payment information for all participants, and is used as a referring database to the main auction database, represented by FIG. 5, during the open auction and for billing purposes when the auction is concluded. FIG. 5 and FIG. 7 are detailed below.

DEPR:
Referring again to FIG. 1, a master computer 11 is connected to the central computer 12 for purposes of setting up, initiating, monitoring and dismantling the auction, and its related sites or pages. For example, in preparation for an auction, numerous details specific to that auction, such as minimum initial bids, event and sponsor names, dates and times, and seating arrangements are generated using the master computer 11 and then transferred by disk or modem or other means to the central computer 12 when needed. The central computer 12 stores these parameters for later application to the auction process. In particular, the central computer 12 stores in the seating database 17, the specific seating arrangement as a unique record for each seat available. The auction is then conducted by the central computer 12, as described below. During the auction, the master computer 11 can be used to monitor the auction progress, make any necessary spontaneous changes to existing parameters, and to generally ensure that the auction is conducted with a minimum of problems. In practice, it may be possible to combine the functions of the central computer 12 and the Master computer 11.

DEPR:
Step 24 in FIG. 2 is illustrated in detail by FIG. 3, an exemplary participant registration flowchart. The potential registrant begins in step 28 by interfacing with one of the terminals, for example, terminal 14.sub.1, of FIG.

1. When the rules and registration internet site is accessed at step 29 of FIG. 3, the registrant is encouraged to read the auction rules thoroughly, and agree to their terms. This site includes a registration form which will contain that registrant's personal information including records for the fields illustrated in the participant database of FIG. 7, as well as a checkbox for agreement to the terms of the auction rules, and a password, if desired to protect access. The password may be chosen for use when accessing the auction, in lieu of re-entering the credit card number. This allows the participant to have an agent place bids, without disclosing the credit card number.

DEPR:
The central computer 12 of FIG. 1 performs all remaining steps in this registration process depicted in FIG. 3. In step 30, of FIG. 3, the registration information is received and in step 31, a determination is made as to whether the information is satisfactorily complete. If not, a message to that effect is sent in step 32 back to the registrant, and the registration process is ended at step 39. If the registration information is satisfactorily complete, then in step 33, the credit information is obtained through existing credit card systems for comparison to the information given by the registrant. In step 34, said comparison is performed and if the credit information does not match or the limit is exceeded, a message to that effect is sent in step 35 back to the registrant, and the registration process is ended at step 39. If in step 34 the card is determined to be valid and the limit not to be exceeded, then in step 36, an `authorization only` hold is placed on the registrant's credit card, for an amount specified by the participant. This limit, also stored in the participant database of FIG. 7, will be that registrant/participant's maximum allowable bid during the upcoming open auction. The authorization hold verifies and reserves the payment means for the seller, while limiting unauthorized bids made by agents of the registrant/participant. Referring again to FIG. 3, in step 37, the registrant is notified that the registration was accepted and then in step 38, the records are sent to the participant database before the registration is ended in step 39.

DEPR:
At step 22 of FIG. 2 before the auction is opened, an internet site is constructed and initiated to provide viewing of graphical displays of the seating and sale information to the participants. FIG. 9 represents one such view, with initial minimum bids displayed in each section. All potential participants may access and view this site before the auction is opened. When the auction is opened, the central computer 12 of FIG. 1 activates the site to become interactive, so participants can use it to place bids. The site activation is represented as step 40 in FIG. 4 which is discussed below. When a participant places a bid, the information is received and then processed by the central computer 12 of FIG. 1 according to the flowchart outlined in FIG. 4.

DEPR:
FIG. 4 is a flowchart illustrating an exemplary auction procedure which is step 25 in FIG. 2. The central computer 12 of FIG. 1 performs all steps in this auction process depicted in FIG. 4. In addition, all bid information received by participants' remote terminals is generated by the central computer 12 of FIG. 1 as web-pages constructed of html programming code. In step 41 of FIG. 4, a bid information record (bid) is received as a response to a web-page form: an html programming tool commonly used to submit information from a personal computer to a server. A bid information record includes received identification information, received section identification, received quantity information, and received bid price information. When a bid is received, as in step 41, then in step 42 a check is made to ensure participant's registration is on record. This is accomplished by conducting a query on the participant database 15 of FIG. 1, detailed in FIG. 7, using the received bid identification information as the query criterion. If the query finds the participant is not registered, a message to that effect is sent in step 43 back to the participant, and the bid is not recorded.

DEPR:
If the query finds the participant is registered, then in step 44 of FIG. 4, a check is made to ensure the participant's bid exceeds the standing minimum bid for the particular section requested. This is accomplished by conducting a query on the main auction database 16 of FIG. 1, detailed in FIG. 5, using the received section identification and bid price information as the query criteria. If the query finds the bid price too low, a message to that effect is sent in step 45 back to the participant, and the bid is not recorded. If the query finds the bid price is not too low, then in step 46, a check is made to ensure the participant's bid is less than the established maximum; specifically, the amount of the authorization only hold established in the participant registration and stored, for example, under the field name "SLIMIT" in the participant database of FIG. 7. Again, this is accomplished by conducting a query on the participant database using the received bid price information as the query criterion. If this maximum is exceeded, a message to that effect is sent in step 47 of FIG. 4 back to the participant, and the bid is not recorded. Upon receipt of such a message, the participant may chose to re-register in order to raise the set maximum. However, an agent of the participant would be unable to do so without the credit card information. Thus, protection is afforded by use of the password established in the participant registration and stored, for example under the field name "SETPASS" shown in the participant database of FIG. 7.

DEPR:
Referring again to FIG. 4, if the comparison in step 46 is positive, then the bid is accepted and displayed as in step 48. In step 49, the bid information record is recorded to the main auction database of FIG. 5 and indexed to the corresponding participant in the participant database of FIG. 7. In step 50 of FIG. 4, again using the received bid price information as the query criterion, the bid is then inserted at the appropriate rank in the seating database of FIG. 6, described below, and indexed to the corresponding bid record in the main auction database of FIG. 5, with lower standing bids being reordered to reflect the new standings. At this step, the lowest bid(s) are removed from the order, (bumped), unless additional seats are still available. Bumped bids are stored in a market research database, represented in FIG. 8, the format of which is similar to that of the main auction database. An added function of this database is to ensure that an accurate record of each bid event can be identified for customer service purposes. Next, participants whose bids become too low are notified.

DEPR:
As shown in step 51 and step 52, if the standing bid price of a pre-selected key seat in the graphical representation has changed as a result of the latest bid, this change is reflected immediately by automatically updating the display of the current bid standings. These prices are displayed within the graphical view of the seating and sale information, just as the initial minimum bids were displayed in FIG. 9. A representation of this real-time bid status view is shown in FIG. 10. This interactive view gives participants clear, useful information sufficient to make bid decisions, regardless of the number of tickets for sale or what location is desired. More precise information is readily obtainable by simply clicking the mouse on the desired section. This action summons the bid form along with a more precise bid status graphic such as shown in FIG. 11. The standing prices represented on these interactive sites are obtained by the central computer 12 of FIG. 1 from records stored in the seating database 17 and inserted into the html file for display to participants. This task is step 52 of FIG. 4 and is repeated each time a change has occurred in the standing bid price of one of these key seats. This determination is represented as step 51 of FIG. 4. These changes are automatically presented to the participants by means of META refresh, a client pull type html programming feature which directs the browser to automatically refresh the information every x seconds, where x is a variable programmed into the html file code. If no key seat prices have changed, no further action is taken until the next bid is received or the auction is ended. In step 53, the auction may be ended in response to a signal which may

be sent from the master computer 11 of FIG. 1 or from an internal timer or some other predetermined means.

DEPR:
Referring again to FIG. 2, step 26, upon auction closing, successful bidders are immediately notified at their terminals and payment is confirmed. The credit cards are debited for the appropriate amounts, and the excess amount from the `authorization only` hold is released. The tickets are then delivered by any of a number of conventional means.

DEPR:
FIG. 5a and FIG. 5b represent the main Auction database which stores and ranks all active bid records and pairs the associated participants and seats accordingly, by referencing the two referring databases. FIG. 5a is the design view of this database, defining the fields and their parameters, while FIG. 5b is the table view showing sample bid records for the first bids in a hypothetical auction. FIG. 6 depicts the seating database, which is the other referring database containing a record of each seat in the venue arranged in order of preference as predetermined by the promoter or ticket seller. This would probably be based on criteria such as distance from center stage, center court, or the finish line. In the case of a festival seating events, accessing the seating database would not be necessary.

DEPR:
The databases shown in FIG. 5, FIG. 6 and FIG. 7 contain records for a hypothetical auction that is greatly simplified for illustration purposes. This hypothetical event venue contains only 12 available seats, each defined by a record in the seating database (FIG. 6b). As shown, minimum bids had been pre-set at $15 and the highest bid received was bid #1 of $30, with a quantity of 2 seats. The first field in the seating database, "SEATID" contains the Unique seat identification number which is indexed to the main auction database (FIG. 5b) by the fields "FSEATID" (first seat identification number) and "LSEATID" (last seat identification number). The last field is "BIDDERID", in which are stored indices referencing records in the participant database. As shown in FIG. 5b, the lowest bid was #3, requesting 2 seats at $15. However, only one seat was reserved, since only one was available at that bid level. As detailed in FIG. 13 above, when the auction is ended, if one ticket is not satisfactory, this participant will be given the opportunity to cancel the bid.

DEPR:
FIG. 10 is a sample participant interface to the auction system during the open auction, represented here as a web page with graphical links to forms for placing bids. As exemplified here, the participant wishing to bid, simply uses a mouse to click on the desired section, calling up a bid form and a more precise view of standing bids to use as a guideline. FIG. 11 shows this more precise view for a participant who clicked on section C. The form on the right confirms this selection and prompts the participant for the specific bid information; while the diagram on the left shows that if, for instance, the bid placed is $73, then the seats will be in the middle of section C, unless future (higher) bids push it back. Likewise, in practice it is possible, albeit tedious, to display bid prices in every row or even for every seat.

DEPR:
In one embodiment, a template may be loaded into participants' terminals prior to their accessing the auction site, said template providing text or graphic information that does not change during an auction or between auctions, such as background art, forms or instructions. Said template may be downloaded from the internet, or installed from a disc or by some other means. Use of a template allows the bid status updates to be made with transmission of only the numerical data, which in combination with the template, presents the comprehensive auction status update to participants. In another embodiment, the bid status changes are automatically presented to the participants by means of the multipart/mixed MIME format, a recently available server-push type programming feature which takes advantage of a connection that is held

open over multiple responses, allowing the server to send more data at will. This method can be more efficient, since new HTTP connections do not have to be reopened.

DEPR:
It is to be understood that the above-described embodiments of the invention are merely illustrative. Other implementations may readily be devised by those of ordinary skill in the art which will embody the principles of the invention and fall within the spirit and scope thereof. In particular, the exemplary contiguous seat algorithm of FIG. 12 may readily be modified to allow repeated movements of a group to ensure adjacent seating or to allow block-style groupings, or other variations. Moreover, this ensuring of contiguous seats shown at step 54 of FIG. 4, could be performed as each bid is placed, rather than only at the close of the auction. Likewise, the last seat cut-off in step 55 of FIG. 4 could be executed with each bid made. Additionally, the auction system may readily be modified to sell each section of the venue in succession or at different internet locations.

CLPR:
3. The automated event ticket auctioning system of claim 2 wherein the central controlling computer is further operable to generate and send to each of a plurality of remote terminals through a communication system, a programmed graphical representation of the event venue seating arrangement, designed to convey to auction participants useful standing bid information across the entire event venue, allowing seat bid price locations to be quantified in an effective manner, by the visible location of the seat bid prices within the graphical representation of the event venue seating arrangement.

CLPR:
5. The automated event ticket auctioning system of claim 4 wherein the central controlling computer is further operable to execute a programmed method for ensuring that the standing bid price information is automatically updated on a real-time basis and presented as such to all auction participants; said programmed method employing programming features such as html META refresh (a client pull type browser directive) or multipart/mixed MIME format (a server push type browser directive).

CLPR:
7. A method of conducting an automated ticket auction by receiving bids from auction participants located at a plurality of remote terminals, the automated ticket auction for a plurality of seats within a venue and corresponding to at least one particular event, the venue having a plurality of sections and each section having a plurality of seats, the method comprising the steps of:

CLPR:
9. The method of claim 8 further comprising the step, between steps (f) and (g), of determining bumped bid records based on the lowest acceptable bid amount and removing bumped bid records from the auction database of the central computer.

CLPR:
13. The method of claim 7 further comprising the step of identifying key seats throughout the venue and displaying on the remote terminals a graphical representation of the venue wherein the bid amounts for bid records associated with key seats are displayed to convey to auction participants useful bid information across the entire venue for the particular event.

CLPV:
(d) storing acceptable bid records in an auction database of the central computer;

CLPV:
(e) assigning a rank to each acceptable bid record stored in the auction database based on the bid amount;

CLPV:
(i) notifying, at the remote terminals, auction participants submitting acceptable bid records that they have been awarded tickets to the event at the determined ticket price.

ORPL:
Internet web site:http://www.onsale.com/(auctions of computer equipment).

ORPL:
Internet web site:http://www2.amrcorp.com/auction/rules.htm/(American Airlines auction).

L1: Entry 15 of 23 File: USPT Oct 19, 1999

DOCUMENT-IDENTIFIER: US 5970479 A
TITLE: Methods and apparatus relating to the formulation and trading of risk management contracts

BSPR:
In respect of the "less tangible" forms of risk, an example in the prior art of a form of management of that risk is that of `pollution rights` sold by the U.S. Environmental Protection Agency (EPA) in March 1993 for the atmospheric emission of sulphur dioxide. This was done by an auction of "allowances" permitting the release into the atmosphere. By the year 1995, any company or organisation emitting sulphur dioxide in the U.S. without enough allowances to cover their total emissions will face prosecution. This means polluters must either buy further allowances, or else modify or replace their plant and equipment to reduce these emissions. The EPA will regulate the total number of allowances able to be obtained. The existing allowances have already become a valuable tradeable `property` as between sulphur dioxide emitters, that is, even before the time when no further allowances will be able to be purchased.

DEPR:
The "counterparty selection" sub-process component extracts from the above-described "potential-counterparties short-list" file the best possible counterparty(ies) for the ordering party's transaction, according to the application promoter-specified "matching rules" embodied in the APP, taking into account whatever matching constraints all applicable APP stakeholders may have prespecified. This selection being made, and the price bid being within the allowable limits specified by the ordering party, and there being no requirements for manual-approval intervention by any relevant stakeholder, a matched order is deemed to be in existence (this sub-process draws principally on the data-file, PSEL LIMIT).

DEPR:
The "option-counterparty selection" sub-process component extracts from the above-described "potential option-counterparties short-list" file the best possible counterparty(ies) for the ordering party's transaction, according to the application promoter-specified "matching rules" embodied in the APP, taking into account whatever matching constraints all applicable APP stakeholders may have prespecified. This selection being made, and the price bid being within the allowable limits specified by the ordering party, and there being no requirements for manual-approval intervention by any relevant stakeholder, a matched option order is deemed to be in existence (this sub-process draws principally on the data-file, DPSEL LIMIT).

L1: Entry 19 of 23. File: USPT Nov 10, 1998

DOCUMENT-IDENTIFIER: US 5835896 A
TITLE: Method and system for processing and transmitting electronic auction information

ABPL:
A system and method for conducting a multi-person, interactive auction, in a variety of formats, without using a human auctioneer to conduct the auction. The system is preferably implemented in software. The system allows a group of bidders to interactively place bids over a computer or communications network. Those bids are recorded by the system and the bidders are updated with the current auction status information. When appropriate, the system closes the auction from further bidding and notifies the winning bidders and losers as to the auction outcome.

BSPR:
The present invention relates generally to electronic commerce and more particularly to conducting an interactive auction over an electronic network.

BSPR:
Auctions usually take the form of a physical gathering of bidders assembled together within an auction house. Auctions presenting more valuable, collectible merchandise, such as art, coins and antiques, are often preceded by preparation of a catalog of merchandise, circulated to interested parties in advance of the gathering at the auction house, where bidding by those physically present will take place. For auctions of more mundane items, such as household possessions, estate sales and the like, the interested bidders simply appear at the appointed time and place and bid on merchandise in which they are interested.

BSPR:
Traditional auctions requiring a bidder's physical presence disadvantageously require that the merchandise lots up for sale be available at the auction venue for inspection by the bidders and subsequent pickup by the successful bidders. For many types of merchandise it would be far easier for both buyer and seller to leave the inventory at its original source and ship purchased items to the successful bidders at the end of the auction. Moreover, physical auctions have the still further disadvantage that only one item may be auctioned at a time. The auctioneer solicits bids from the floor for a given lot, but once the highest bid has been accepted, the lot is closed and the next lot brought forward. This sequential processing combined with the finite amount of time available to a gathered group is inherently limiting because multiple lots cannot be auctioned simultaneously to the same group of people during their limited period of availability.

BSPR:
Some changes in bidding requirements have made traditional auctions somewhat more convenient for bidders. Many auction firms allow bidders to submit their bids in advance of the auction. Advance bidding may be done by mail as a convenience to the bidders so that they do not have to be physically present at the auction. Also, the advent of the telephone and facsimile machine allowed bidders to submit bids in near real-time during the course of an auction. These technologies free the bidder from being physically present at the auction, thereby saving time and travel expense. To incorporate these

technologies into the traditional auction format, representatives of the auction firm receive telephone or facsimile bids from their clients and alert the auctioneer of these new bids. Similarly, the representatives may relay information about the current bid items, such as the current high bid, back to the telephone bidders.

BSPR:
Bidding by mail or facsimile suffers a significant disadvantage as compared to bidding in person or by telephone because the mailing or faxing bidder has no opportunity to increase a bid in quick response to competitive bids received from the floor or by telephone. Moreover, although telephone bidding allows the bidder to avoid travel expense and inconvenience, traditional auctions may be scheduled at inconvenient times for many remote bidders. Also, because of the large number of items or lots sold in a typical auction, which can number in the eight hour period in order to be present when the few lots in which the bidder has an interest come up for sale. The lots in which the telephone bidder is interested may be scattered throughout the lengthy traditional auction. Time zone differences further diminish the appeal of telephone bidding for an international potential customer base.

BSPR:
All of these limitations and disadvantages of physical auctions, even when telephone bidding or bidding by facsimile is permitted, serve to discourage a large number of bidders and ultimately leads to lower selling prices to the economic detriment of the auctioneer and seller.

BSPR:
Electronic auctions held over the Internet using electronic mail (E-mail) have provided a minor innovation as compared to more traditional physical options. In E-mail auctions, an auction catalog is electronically mailed to people interested in bidding. Subsequently, bidders submit their bids on individual lots to an auctioneer via E-mail. The auctioneer reads the electronic mail bids and enters them in a database of bids. When the auction closes, the auctioneer notifies the winning bidders, usually via electronic mail, and ships the merchandise to the winning bidders.

BSPR:
There are several disadvantages to E-mail auctions. First, a human auctioneer is required to prepare the auction catalog and to read and process the electronic mail bids. This takes a considerable amount of effort in a large auction. Secondly, it is difficult to keep the bidders updated as to the current high bids on the various items. Electronic mail on most large public networks, such as the Internet, is lower priority traffic than most, meaning it can take several hours for bids to reach the auctioneer and for bidding updates to reach the bidders. Thirdly, as the auction closing draws near, the volume of bids may prohibit the auctioneer from sending out high bid information to the bidders because of the time involved in reading the electronic mail bids and in entering them into the bid database.

BSPR:
A recent innovation applied to E-mail auctions is the use of the Internet's World Wide Web (WWW) facility to post descriptions of the merchandise and show the current high bids. This innovation provides the advantage of eliminating the need to electronically mail bidding updates to bidders. And since WWW traffic is much higher priority on the Internet, bidders suffer less of a time lag in seeing updated Web pages. However, a human auctioneer is still involved and is required to manually process the electronic mail bids, enter them into the bid database, and to update the World Wide Web pages with current high bid information.

BSPR:
Sales firms other than auction houses have also used the Internet's World Wide Web facility to post descriptions of their merchandise and to offer the merchandise for sale at a set price. These systems are automated and are capable of accepting an order from a customer by having that customer fill out

an online order form. This order information is taken by the system and placed into an order database or accounting system which then processes the order. However, such systems sell merchandise only at a fixed price and do not allow merchandise to be auctioned off, or to have their prices dynamically adjusted in an interactive manner in response to bids and other market conditions such as supply and demand.

BSPR:
Security brokerage firms for years have used automated transaction systems for matching buy and sell orders for securities. For example, the New York Stock Exchange's DOTS (Direct Order Transmission System) and the NASDAQ's SOES (Small Order Execution System) systems offer complete electronic matching of buyers and sellers. However, these systems do not operate an auction. They merely pair buy orders with sell orders when the pricing criteria of both sides of the trade are met.

BSPR:
A number of issued U.S. patents relate to various forms of electronic commerce. These patents fall into three broad categories: 1) patents relating to on-line networks, 2) patents relating to electronic commerce over on-line networks, and 3) patents related to various forms of securities (e.g., stocks and futures) trading via electronic means. From the first of these groups, on-line networks, U.S. Pat. No. 5,406,475 entitled Data Processing Network Having A Plurality Of Independent Subscribers, U.S. Pat. No. 5,235,680 entitled Apparatus And Method For Communicating Textual And Image Information Between A Host Computer And A Remote Display Terminal, and U.S. Pat. No. 5,310,997 entitled Automated Order And Delivery System, are representative of the prior art. These patents describe systems of terminals connected over wide area networks to centralized computers. However, they do not disclose the details of electronic commerce or auctions in particular.

BSPR:
In the second group, patents relating to electronic commerce, U.S. Pat. No. 5,285,383 entitled Method For Carrying Out Transactions Using Electronic Title, and U.S. Pat. No. 5,297,031 entitled Method And Apparatus For Order Management By Market Brokers, describe various means for conducting transactions over electronic communications networks. They also describe various means for displaying merchandise for sale to a plurality of customers connected to a central computer of a computer network and various means for conducting simple sale transactions where a buyer purchases an item at the stated price. As a group, these patents do not disclose the means for conducting electronic auctions or any sales format other than a simple or "straight" sale.

BSPR:
One particular U.S. Pat. No. 4,789,928, discloses a means for soliciting bids over an electronic network from bidders that are remote to the site of a live auction. This system records bids from remote bidders and simultaneously transmits the current high bid from the floor of the physical auction to the terminals of the remote bidders. However, this patent does not disclose or suggest the concept of an electronically conducted auction including a means for automatically closing the auction under certain conditions and without benefit of a live human auctioneer. Furthermore, this patent fails to disclose or suggest a means for auctioning a plurality of items simultaneously; rather, the disclosed system is strictly tied to the sequential proceedings of a physical auction. Finally, this system contemplates only a simple "highest bidder" auction where a single lot goes to an individual high bidder. This system cannot handle a lot available for auction which includes a plurality of items and where a plurality of winning bidders sufficient to match the plurality of auctioned items exists.

BSPR:
In the third group of patents related to electronic commerce, patents relating to securities trading, U.S. Pat. No. 4,412,287 entitled Automated Stock Exchange, and U.S. Pat. No. 5,077,665 entitled Distributed Matching System,

disclose means for prospective buyers to post offers to buy a given security at a specific price and for prospective sellers to post offers to sell a given security at a specific price. These automated systems maintain lists of buy and sell orders. If an offer to buy a security is placed at a price greater than or equal to an existing offer to sell that security at a given price, these systems will automatically consummate the trade by matching the buyer with the seller. While the securities industry uses, and these patents disclose, such terms as "auction" and "bid", they are actually referring to the process of matching a set of buyers' bids with a set of sellers' prices. There is no auction in the true sense of a plurality of bidders simultaneously bidding in a manner accessible to all bidders and sellers in order to achieve a high selling price. In fact, these patented systems do not include disclosure of the list of open buy or sell orders, thus depriving the seller of the ability to openly solicit the highest price for securities. Instead, the market price of securities sold through these automated systems fluctuates up and down based upon the last successful match between an open buy order and an open sell order when both the buyer and seller have placed orders at compatible prices. There is no ability in such systems to conduct truly competitive and open bidding.

BSPR:
The present invention overcomes the above-listed drawbacks of the background art by providing a method and system for conducting auctions and mark down sales of merchandise over a computer network without the aid of a human auctioneer. The system is open to bidders anywhere in the world, leading to increased bid activity. Complete and thorough descriptions of all offered merchandise may be placed on-line, since the costs associated with printing auction catalogs are minimized in an electronic medium. An auction within the inventive system may be conducted over a period of time, mitigating the problems of inconvenient scheduling and time zone differences. A variety of auction formats can be employed within the inventive system depending on the type of merchandise being sold. And finally, the method and system of the present invention can be conducted automatically without the need for a human auctioneer, thereby allowing for a large number of items to be continuously auctioned.

BSPR:
To address the shortcomings of the background art, the present invention provides, in a computer network enabling communication between a host computer and a plurality of remote bidders, a system and method for transmitting and processing auction information implemented as a computer program within the host and network, comprising posting means for posting information across the network, the information being descriptive of a lot available for purchase, bidding means available to the bidders for submitting a plurality of bids across the network in response to the information, receiving means for receiving a plurality of bids sent across the network by the plurality of bidders, and categorizing means for automatically categorizing the bids as successful or unsuccessful.

BSPR:
The present invention further provides, in a computer network enabling communication between a host computer and a plurality of remote customers, an auction information transmission and processing system implemented as a computer program within the host and network, comprising, a merchandise database connected in communication with the host for storing merchandise information, the merchandise information being descriptive of a lot available for purchase by a customer, a bid database in communication with the host for storing bid information, the bid information being descriptive of a bid received from one of the remote customers, an auction manager implemented in the server and in communication with the databases, an electronic mail messenger in communication with the auction manager and the bid database, a bid validator, including means for receiving bids from the customers, connected to the auction manager and in communication with the bid database, wherein the auction manager induces a customer to bid across the network on a lot of merchandise by posting a descriptive merchandise catalog page

containing data from the merchandise database, the customer views across the network the catalog page and sends a bid to the bid validator across the network, the bid validator determines whether the bid is valid, the bid database stores the bid, the auction manager determines whether the bid is successful, and the electronic mail messenger notifies the customer whether the customer's bid was determined to be successful by the bid manager.

BSPR:
A primary advantage of this system is that it results in greater prices for merchants as well as broader distribution of their products. By incorporating an auction format which is available to a wide audience via electronic means, the inventive system and method results in more bidders, greater demand, and hence higher prices for the seller. And because this electronic system reaches a geographically diverse audience, merchants' product lines becomes visible in areas where their products are not normally distributed or advertised, resulting in increased sales volume without increased marketing expense. As the network grows, business grows. Furthermore, the electronic auction system is automatic and does not require a human auctioneer, thereby allowing many individual items to be auctioned during the same time period and providing a decrease in costs associated with running an auction. Indeed, it would not be possible to operate an equivalent twenty-four hour per day, seven day per week auction with potentially hundreds or even thousands of individual items and millions of potential bidders without such an inventive electronic auction method and system.

DRPR:
FIG. 2 illustrates a merchandise catalog page offering an item for sale via electronic auction on the Internet's World Wide Web;

DRPR:
FIG. 3 depicts a bid form for bidding on an auction item;

DRPR:
FIG. 6 is a flowchart illustrating the auction manager and its method of operation;

DRPR:
FIG. 9 is a flowchart illustrating the standard auction format and its method of operation;

DRPR:
FIG. 10 is a flowchart illustrating the Dutch auction format and its method of operation;

DRPR:
FIG. 11 is a flowchart illustrating the progressive auction format and its method of operation;

DEPR:
An inventive method and system is disclosed for conducting a multi-bidder, interactive auction without using a human auctioneer to conduct the auction. Preferably implemented in software, the electronic auction system allows a group of bidders to interactively place bids over a computer or communications network, automatically records the bids, updates the bidders with the current auction status information, closes the auction from further bidding when appropriate, and notifies the winning bidder or bidders and loser or losers as to the auction outcome.

DEPR:
The inventive system includes a database for maintaining descriptions of the merchandise for auction, the bids, and other relevant information in a commercially available database system. Database searches are preferably performed periodically to check for new items to be made visible to potential bidders. Such periodic searching allows an individual charged with maintaining this system to load relevant information into the database at his or her

leisure. Once the database is loaded with information about the item and the item is scheduled for presentation to potential bidders, the system takes the merchandise information and creates a human readable catalog page for a viewing over a public network such as the Internet's World Wide Web. Bidders are then able to view the new item for auction and to place their bids. These catalog pages preferably contain the current high bid, bid increment, quantity available, merchandise description, and picture of the item.

DEPR:
This process preferably continues until the system detects that the item is scheduled to be closed for further bidding or another closing trigger is detected. At this point, the system closes the auction by updating the merchandise catalog page with the final winning bid information and by sending electronic mail notifications to both the winning bidder or bidders and the losing bidder or bidders.

DEPR:
The present invention provides an electronic auction method and system for presenting merchandise for sale at auction to customers over an electronic network, such as the Internet's World Wide Web. Potential customers are presented with a series of descriptive merchandise catalog pages through which they may navigate to find items (lots) of interest. Upon finding a lot of interest, customers may click a button on screen to display a form for placing a bid on the lot. After submitting this bid, the electronic auction system records the bid and updates the lot's merchandise catalog page to show the current high bid or bids and to whom such bids are attributable. When the auction is closed, after a period of no bidding activity, at a predetermined time, or when a desired sales volume is reached, the electronic auction system notifies the winning and losing bidders by electronic mail and posts a list of the winning bidders on the closed lot's merchandise catalog page.

DEPR:
By pressing bid button 1 in FIG. 2, the customer is presented with a bid form such as the one shown in FIG. 3. The customer fills out the required information in the bid form and presses "Place Bid" button 2 to send the bid to the electronic auction system for processing. Other equivalent means for submitting a bid could be used, as understood by those skilled in the art to which the present invention pertains.

DEPR:
FIG. 4 illustrates a high level block diagram of the electronic auction system of the present invention. As shown, information from bid form 20 is received by the electronic auction system where it is processed by bid validator 21. Bid validator 21 examines the bid information entered by the customer on bid form 20 to ensure that the bid is properly formatted, all necessary data is present, and the data values entered look credible. Exemplary functions of bid validator 21 include verifying credit card information entered by the customer, checking that a complete name and shipping address has been entered, that the proper state abbreviation and zip code have been entered, that an appropriate bid amount has been entered, and that a telephone or facsimile number has been entered. Once the bid information has been validated, the bid validator 21 places the bid in bid database 31.

DEPR:
Auction manager 26 preferably frequently queries the bid database 31 to see if any new bids have been placed. If new bids are found during the query, then auction manager 26 calculates the current high bidder or bidders and instructs merchandise catalog page generator 25 to regenerate a catalog page with the updated bid information.

DEPR:
Auction manager 26 is also responsible for opening and closing auctions. This entails making merchandise lots available for bidding by customers and disabling their associated buy or bid features on the merchandise pages that have been posted to potential bidders but have closed. When auction manager 26

determines that a new lot should be opened for bidding or an available lot should be closed, it instructs merchandise catalog page generator 25 to create or update the merchandise catalog pages for the appropriate lots.

DEPR:
Electronic mail messenger 27 frequently queries bid database 31 for bids recently marked by auction manager 26 as having been outbid or as having won an item in a recently closed auction. If such bids are found, the electronic mail messenger 27 formats an appropriate electronic mail notification message 24 and sends this message to the customer. Many customers read their electronic mail throughout the day, making this a convenient mechanism for keeping them informed about the status of merchandise on which they are actively bidding. Bidders may reply to an electronic mail notification message 24 informing them that they have been outbid by including an increased bid amount in the reply message. An electronic mail bid 22 sent in reply to the notification is received by the electronic auction system and processed by bid validator 21 as described above.

DEPR:
FIG. 6 provides a detailed illustration of the procedures carried out by auction manager 26. Auction manager 26 is preferably a continuously running system that begins by getting the current time as at step 51. It then checks to see if any new items for sale are to be opened by examining the merchandise database to see if any new merchandise items are scheduled to be made available for bidding by customers at or before the current time. Operator 300, or some automated substitute, may upload merchandise and scheduling information to the database, as shown in FIG. 1. If new merchandise items are scheduled for posting, these items are opened for bidding 52. The auction manager then examines the merchandise database to see if any merchandise items are scheduled to be closed from customer bidding. If so, these items are closed from bidding 53. Auction manager 26 then examines the merchandise database to see if any merchandise items posted with a price markdown feature are scheduled to have their prices adjusted. If so, the prices of these items are adjusted 54 in accordance with the particular item's price adjustment parameters. Such parameters may include bidding activity over time, amount of bids received, and number of items bid for. Auction manager 26 then updates 55 the bid list for open items by recalculating the current high bidder list and regenerating the merchandise catalog pages 56 to reflect these new bids. This step is more fully described below with reference to FIG. 7.

DEPR:
FIG. 7 illustrates the procedures carried out by the bid manager in updating the bid list for open items 55 as shown in FIG. 6. The bid manager begins by checking 61 if there are more merchandise items to be processed. If such items are found, the bid manager selects 62 a merchandise item to process and queries 64 the bid database for bids for this item. These bids are sorted 65 using a variety of different priority ranking schemes depending upon the auction method and system used for the particular merchandise item, as described in more detail below. Then, the bids are marked 66 as either successful or unsuccessful depending upon the bid price of the respective bids and the quantity of the item being bid on relative to the quantity of the item being auctioned. In a preferred embodiment, a quantity of an item may be put up for auction, and individual bidders may bid on any quantity of the item desired, up to the quantity of the item being auctioned.

DEPR:
The bid manager then checks 67 to see if there are any active proxy bids marked as unsuccessful. A proxy bid is a special bid type that allows auction manager 26 to automatically bid on the bidder's behalf up to a limited amount established by the bidder when his or her initial bid is placed. The auction manager will increase the bid as necessary up to the limit amount. This feature allows the customer to get the lowest possible price without exceeding a limit preferably established when the bid is entered. If there are active proxy bids marked as unsuccessful, then the bid manager increments 69 the proxy bids by a preset bid increment. This procedure of sorting 65 marking 66

bids and incrementing 69 the proxy bids as required continues until either there are no additional proxy bids marked as unsuccessful or the proxy limits have been reached on the proxy bids. At this point, bid database 31 is updated 68 with the marked bids. This process is then repeated for each merchandise lot open at the current time for bidding by customers.

DEPR:
One skilled in the art to which the present invention pertains will recognize that the various components of the electronic auction system can communicate between themselves in a variety of ways. In a preferred embodiment, bid validator 21, auction manager 26, and electronic mail messenger 27 communicate by adding, marking, and updating records in the various databases. Each of these components periodically checks at least one of the databases to see if anything relevant to their respective functions has changed and take action accordingly. However, the components could send direct messages between themselves or call each other by means of program subroutines to signal important events that would require one or the other component to update its state.

DEPR:
One skilled in the art to which the present invention pertains will further recognize that a variety of different auction formats may be implemented using the basic technique described above. The simplest is the "Standard Auction" format, whereby the electronic auction system awards the merchandise to the top bidder or bidders in accordance with their bids once bidding has stopped. Using this format, if there is a plurality of a specific item, the system awards the merchandise to the top bidders. Bidders may bid on more than one unit, and different successful bidders will, in general, pay different prices for an item.

DEPR:
FIG. 9 illustrates the Standard Auction format where bid manager 55, shown in FIG. 6, determines which bids to mark as successful or unsuccessful, as shown in step 66 in FIG. 7. Bid manager 55 begins by sorting 91 the bids by amount of the bid. If there are bids remaining to be processed, determined at step 97, the highest remaining bid is selected 98 to be checked. If the bid is below the minimum bid allowed for the particular merchandise item, as determined at step 93, the bid is marked 99 as unsuccessful. If not, the bid is checked 94 to see if the quantity may be satisfied. A bid may be satisfied if the quantity of the item bid upon is available. This information is available from auction database 29. If not, then the bid is marked 99 as unsuccessful. Optionally, the system could ask the user if a lesser quantity than bid upon will be acceptable, as shown in FIG. 2 at box 310. If the bid quantity can be satisfied, as determined at step 94, then the bid is marked 95 as successful and the item quantity remaining, recorded in auction database 29, is decremented 96 by the bid quantity. After the quantity remaining is decremented 96, and if, as determined at step 97, there are still bids remaining to be marked, the next highest bid is selected 98 and the steps of FIG. 9 are repeated.

DEPR:
The electronic auction system of the present invention also provides a "Dutch Auction" format, wherein the electronic auction system awards the merchandise to all of the top bidders for whom there is available inventory at the price bid by the lowest successful bidder. This format may be preferred by customers for being the most fair when a plurality of a specific item is being auctioned. As with all bidding, there will be a range of bids submitted. In the Dutch Auction format, the highest bidders are awarded the merchandise but at the same price for all successful bidders, the price bid by the lowest successful bidder.

DEPR:
FIG. 10 illustrates the Dutch Auction format whereby bid manager 55 shown in FIG. 6 determines which bids to mark 66 as successful or unsuccessful, as shown in FIG. 7. Bid manager 55 begins by sorting 111 the bids by amount of

the bid. If there are bids remaining to be processed, as determined at step 97 the highest bid is selected 98 to be checked. If the bid is below the minimum bid allowed for the particular merchandise item, as determined at step 93, the bid is marked as unsuccessful 99. If not, the bid is checked 94 to see if the bid quantity may be satisfied. If the bid cannot be satisfied, then the bid is marked as unsuccessful at step 99. If the bid quantity can be satisfied, then the bid is marked as successful at step 95 and the item quantity remaining is decremented 96 by the bid quantity. At this time the MinWin price is recorded 117. The MinWin price is the price above which a new bidder must bid in order to be successful in the Dutch Auction format were the auction to close at that moment. The MinWin price is, in general, the bid price of the lowest bid that is marked as successful. After recording the MinWin price at step 117, where there are still bids remaining to be marked, as determined at step 97, the next highest bid is selected 98 and the steps of FIG. 10 are repeated.

DEPR:
The electronic auction system of the present invention also includes a "Progressive Auction" format, wherein the electronic auction system awards the merchandise to the top bidders based on price bid. As with the Dutch Auction format, the highest price bids are awarded the merchandise up to the quantity available of the item being auctioned. However, unlike the Dutch Auction format, the system awards the merchandise to the successful bidders at different prices depending on the quantity bid. In a preferred embodiment, a successful bidder for a single unit of an item is awarded the item at the price of the lowest successful bid for a single unit of the item. A successful bidder for a higher quantity of the same item is awarded the item at the price of the lowest successful bid at that quantity or any lower quantity. For example, a successful bidder for a quantity of five would pay the lowest price for any successful bid for quantity one through five of the item. The price paid for a given quantity is termed the "MinWin" price for that quantity. The Progressive Auction format ensures that successful bidders for a quantity of an item pay the lowest price paid by any other successful bidder at that quantity level or below. Use of this format leads to lower prices for those who successfully bid on larger quantities of an item, provides an impetus for volume buying, and therefore leads to greater sales volume.

DEPR:
FIG. 11 illustrates the Progressive Auction format, wherein bid manager 55 shown in FIG. 6 determines which bids to mark as successful or unsuccessful 66 as shown in FIG. 7. Bid manager 55 begins by sorting 131 the bids by amount of the bid. If there are bids remaining to be processed, as determined at step 97, the highest bid is selected 98 to be checked. If the bid is determined to be below the minimum bid allowed for the particular merchandise item at step 93, the bid is marked as unsuccessful 99. If not, the bid is checked at step 94 to see if the bid quantity can be satisfied. If not, then the bid is marked 99 as unsuccessful. If the bid quantity is checked and found to be satisfied at step 94, then the bid is marked as successful 95 and the item quantity remaining is decremented 96 by the bid quantity. The MinWin price is then recorded 137. The MinWin price is the price above which a new bidder must bid in order to be successful in the Progressive Auction format were the auction to close at that moment. The MinWin price is, in general, the bid price of the lowest bid at the current bid quantity or lower that is marked as successful. After recording the MinWin price 137, if there are still bids remaining to be marked, the next highest bid is selected 98 and the steps of FIG. 11 are repeated.

DEPR:
The electronic auction system also includes a "Buy Or Bid" format wherein the electronic auction system awards merchandise to bidders who place bids at or above a posted selling price. The item remains for sale until the available quantity is purchased. Bids that are below the posted selling price are maintained in reserve by the system. If a certain sales volume is not achieved in a specified period of time, the electronic auction system automatically reduces the price by a predetermined amount or a predetermined percentage of the price and updates the merchandise catalog page accordingly. The lower

price may be at or below some of the bids already in the bid database. If such bids are present, they are then converted to orders and the quantity available is reduced accordingly. Similarly, if a certain sales volume is exceeded in a specified period of time, the electronic auction system automatically increases the price by a set amount or by a set percentage of the price and updates the merchandise page accordingly. These automatic price changes allow the seller to respond quickly to market conditions while keeping the price of the merchandise as high as possible to the sellers benefit.

DEPR:
The electronic auction system also includes a "markdown" feature, wherein the electronic auction system of the present invention awards merchandise to buyers who place orders at the currently posted selling price. The item remains on sale until the available quantity is purchased. If a certain sales volume is not achieved in a specified period of time, the electronic auction system automatically reduces the price by a set amount or a set percentage and updates the merchandise catalog page accordingly. This lower price encourages buyers to take advantage of the new price. If a certain sales volume is exceeded in a specified period of time, the electronic auction system automatically increases the price by a set amount or a set percentage and updates the merchandise page accordingly. These automatic price changes allow the system to respond to market conditions while keeping the prices of the merchandise as high as possible to the seller's benefit.

DEPR:
FIG. 14 illustrates the Markdown price adjustment feature whereby auction manager 26, as shown in FIG. 4, periodically adjusts 54 the sales prices or minimum bid prices, of the merchandise items according to a predetermined schedule as shown in FIG. 6. If more merchandise items are found in the merchandise database at 181, a merchandise item is selected 183 for Markdown. If a Markdown event has occurred for the item, as determined at 184, the item's price is adjusted 185 according to the schedule preset for the individual item. Alternatively, the adjustment could be relative to prices offered for the merchandise. The merchandise item is then updated 186 in the database with the new sale price or minimum bid price. The steps of FIG. 14 are then repeated for each successive merchandise item in the merchandise database.

DEPR:
The electronic auction system of the present invention preferably includes a "Proxy Bidding" feature that may be applied to any of the auction formats described above. FIG. 7 fully describes auction manager 26 including the Proxy Bidding feature. When Proxy Bidding is employed, a bidder places a bid for the maximum amount they are willing to pay. The electronic auction system, however, only displays the amount necessary to win the item up to the amount of the currently high proxy bids of other bidders. Typically, the currently high bids display an amount that is one bidding increment above the second highest bid or bids, although a percentage above the second highest bids may be used as well. When a new bidder places a bid that is above a currently displayed high bid, the proxy feature will, in general, cause the currently high bid to move up to an amount higher than the new bid, up to the maximum amount of the currently high bidder's proxy bid. Once a new bidder places a bid in excess of the currently high bidder's proxy bid, the new bid becomes the current high bid and the previous high bid becomes the second highest bid. This feature allows bidders to participate in the electronic auction without revealing to the other bidders the extent to which they are willing to increase their bids, while maintaining control of their maximum bid without closely monitoring the bidding. Participation is engaged in automatically on the bidder's behalf by the inventive system. The feature guarantees proxy bidders the lowest possible price up to a specified maximum without requiring frequent inquiries as to the state of the bidding.

DEPR:
One skilled in the art to which the present invention pertains will recognize that a variety of different auction formats may be implemented in addition to

those described above. One skilled in the art will also recognize that the electronic auction system of the present invention can employ a "Floating Closing Time" feature whereby the auction for a particular item is automatically closed if no new bids are received within a predetermined time interval. This feature would typically be implemented in a manner similar to that used to close auctions of old items, as shown at step 53 in FIG. 6. This feature forces the bidding activity to occur within a shorter amount of time than would otherwise be achieved because bidders are aware that the item will automatically close if no new bids have been received in a timely manner. Thus, bidders have an incentive to stay active in the bidding process to avoid closure of an item before maximum, and most potentially winning, bids have been entered. The Floating Closing Time feature also allows more items to be auctioned during a period of time since each item is closed once bidding activity ceases; the bidding period is not protracted to an artificial length as is the case when an item closes at a preset date and time. The Floating Closing Time feature of the present invention may be employed either in conjunction with or independent of a fixed closing time for an item. When employed in conjunction with a fixed closing time, the auction is closed either when the preset fixed time period has expired for the item or when no bidding activity has occurred within a preset time interval. This forces the bidding to cease at a particular time in case the bidding activity becomes artificially protracted.

CLPR:
1. In a computer network enabling communication between a host computer and a plurality of remote customers, an auction information transmission and processing system implemented as a computer program within said host and network, said system comprising:

CLPR:
2. The system of claim 1 wherein said auction manager includes:

CLPR:
3. The system of claim 1 wherein said auction manager includes:

CLPV:
an auction manager implemented in said server and in communication with said databases;

CLPV:
an electronic mail messenger in communication with said auction manager and said bid database;

CLPV:
a bid validator, including means for receiving bids from said customers, connected to said auction manager and in communication with said bid database;

CLPV:
wherein said auction manager induces a customer to bid across said network on a lot of merchandise by posting a descriptive merchandise catalog page containing data from said merchandise database, said customer views across said network said catalog page and sends a bid to said bid validator across said network, said bid validator determines whether said bid is valid, said bid database stores said bid, said auction manager determines whether said bid is successful, and said electronic mail messenger notifies said customer whether said customer's bid was determined to be successful by said auction manager.

ORPL:
"Onsale: Onsale brings thrill of Auctions and Bargin hunting online; unique internet retail service debuts with week-long charity auction for the Computer Museum in Boston", Business Editors/Computer Wriuters, May 24, 1995, Dialog file 610, Accession No. 0489267.

ORPL:
Dialog(R) File 610:Business Wire (c) 1997 Business Wire, "Onsale: Onsale Brings Thrill of Auctions and Bargain Hunting Online: Unique Internet retail service debuts with week-long charity auction for The Computer Museum in Boston", Mountain View, CA, May 22, 1995.

ORPL:
Dialog(R) File 16:Promt(R) (c) 1995 Information Access Co., "Car auction reaches into space", Automotive News, Nov. 25, 1991, p. 6.

ORPL:
Dialog(R) File 609:KR/T Bus. News (c) 1995 Knight-Ridder/Tribune Bus News., "California Computer Auctions No Boon For Bargain Hunters", Sep. 13, 1993, by Tom Schmitz, San Jose Mercury News, Calif.